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RAIL-ROAD NEWS.

Arkansas---Internal Improvements.

We have received a pamphlet containing the address of a committee of gentlemen, of which Roswell Beebe, Esq., is chairman, appointed by the citizens of Little Rock, Arkansas, to take preparatory steps for the construction of a railroad from Little Rock to the Mississippi River. The address advocates the united efforts, mental and physical, of the people of the whole country, to open a central line of railroads through the heart of the State, connecting the whole of the State with the commerce of the "Mississippi," thence with the thoroughfares of the United States. The address is an able and exceedingly sensible one. It calls upon the people of Arkansas to go and look upon the wonders done in other States by railroads, and then to work with energy and build railroads in Arkansas. We hope the people of that State, so abundant in natural resources, will at once arise and build up a system of railroads—also a system of plank roads—and thus open up avenues for the transport of the natural products which wave in every valley, and are hid beneath every turf in that rich State. There is no State in our Union, not one, which would be more benefitted by a system of railroads than Arkansas. The people of Arkansas have applied to Congress for a grant of land to build the Arkansas Central Railroad.

Railroads in California.

There is a considerable feeling excited in California about railways. It would be a great benefit to that country. if a system of railways was laid. We see by the Alta Californian that the survey of the Pacific and Atlantic Railroad, from San Francisco to San Jose, had been completed, and Dr. Cobb was shortly to leave for New York, to raise funds for the enterprise. The project of building the road meets with good encouragement among those more immediately interested.

Blue Ridge Mountain.

Col. Crozel, Engineer of the Blue Ridge Tunnel, contradicts the rumor that that important work had been discontinued on account of the hardness of the rock. It is about a year since the tunnel was begun, and the perforation has been extended nearly 1,000 feet. Col. C. expects that the cars will be run through in a little over three years. The rock penetrated is mostly of a uniform hardness. But little trouble has been experienced from water, and there has been no necessity for ventilation. The perforation is 16 feet in width by 21 in height.

To Make Good Indian Bread.

Beat two eggs very light, mix alternately with them one pint of sour milk, or buttermilk, and one pint of fine Indian meal, melt one table-spoonful of butter and add to the mixture, dissolve one table-spoonful of soda and saleratus, &c., in a small portion of milk, and add to the mixture the last thing; beat very hard and bake in a pan in a quick oven.

DODGE'S NIGHT SIGNALS FOR SHIPS.

Figure 1.

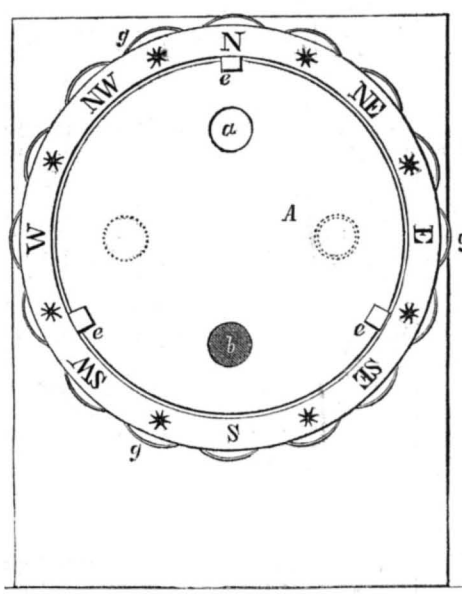
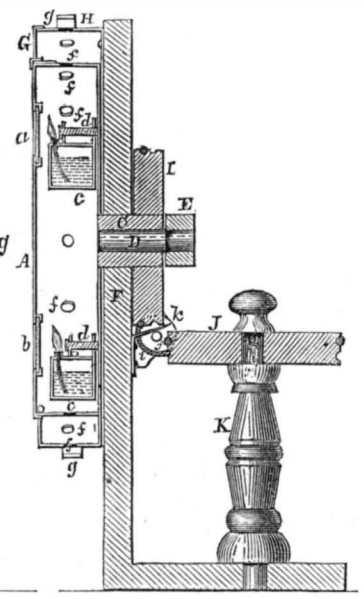


Figure 2.

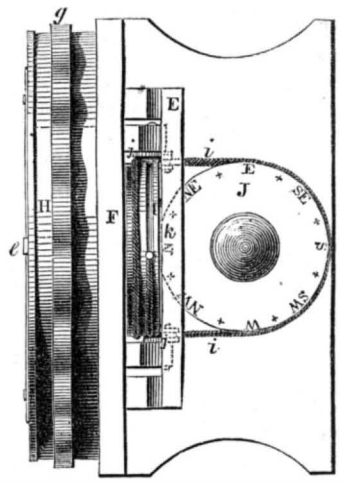


The accompanying engravings illustrate the night signals for steam and other sailing vessels, invented by Mr. Thomas H. Dodge, of Nashua, New Hampshire, and briefly noticed in our last number.

Fig. 1 is a front view; fig. 2 is a vertical section of the same taken through the centre at right angles to its face; fig. 3 is a plan view. The same letters of reference indicate like parts.

A is a revolving disc, forming the head of a drum. It has a hollow axle, C, fitted on a stationary one, D, which is secured in any convenient place in the vessel to make the disc face the head. The axle, D, is represented as secured in a rail, E, attached to the back of a board, F, which may be supposed to represent part of the wheel-house of a vessel. The revolving disc, A, has two circular holes, *a* and *b*, of equal size, but opposite one another, one of which is furnished with a white glass,

Fig. 3.



the other with a *red* glass. Behind these glasses, lamps, *c c*, are hung upon pins, *d d*, secured in the back of the drum. These lamps are so arranged that the lights are always opposite the glasses, *a b*, whatever may be the position of the drum; they always hang vertically. The disc is hinged to the drum and capable of opening for trimming and adjusting the lamps; *e e*, are fastenings to secure it. G is a ring with points of the compass graduated in it, (north being placed at the top) and forms part of a cylindrical casing, H, surrounding the drum, and secured to the board, F. The drum and cylindrical casing are perforated with holes, *f f*, to admit air to the lamps. The holes in the casing, H, are covered with slides of metal, *g g*, to protect them against the entrance of water. I is a band wheel secured to the hollow axle, C. J is another band wheel fitted on the stationary axis, *h*, at the top of the standard, K, behind the board. The two band wheels are of equal diameter and their peripheries are connected around guide rollers, *j j*. When J is moved on its axis, it causes I to move the same distance. The top of J forms a table, which is graduated like a compass, and there is a stationary pointer, *k*, attached to the back of the board, F. The position of the two wheels bear such relation to each other, that when any particular point of the compass on the wheel, J, is opposite the stationary pointer, *k*, the white light points to the corresponding point on the compass which surrounds the revolving disc. The object of the wheel, J, is to set the lights from the deck in the proper position to indicate the course of the vessel when the lights are elevated above the deck. Whenever the course of the vessel is changed, the wheel is turned to bring the pointer on its table, which corresponds to the point to which the vessel is heading to the pointer, *k*; this brings the white light, *a*, opposite the corresponding point on ring G. The white pointer, *k* in fig. 3, indicates north, and in fig. 1 the white light is shown above the red or pointing to the north, this would show the vessel to be on a northward course. When the disc is turned to bring the red light to the right, and the white to the left, as shown by the dotted lines, fig. 1, the white points west and shows the vessel to be on a westward course. It is always to be understood that the white light is the pointer; any person familiar with the points of the compass on another vessel will be able to distinguish the vessel's course, though nothing but the lights may be visible. The red light may be stationary in the centre and the white may revolve around it; the application is the same, but the arrangement represented economises space, and enables lights to be placed at a greater distance apart on the same disc. The red light, as is well known, is seen at the greatest distance at night. This signal can also be used as one of distress by moving the white light from side to side above the red light. It could not fail to attract notice at a considerable distance. A different movement of the lights above or below, might be determined on to distinguish steam from mere sailing vessels.

We hope this signal will meet with the general attention which it deserves. It is our opinion that all vessels, and especially steamships, should be made to carry night signals; we also believe that they will do so at no great distance of time from the present moment.

More information about this invention may be obtained of the inventor (who has taken measures to secure a patent) by letter.

Encke's Comet.

Encke's Comet was observed simultaneously at the Washington and Cambridge Observatories on Tuesday last. Lieut. Maury of the National Observatory, publishes a detail of the observations of Mr. Ferguson, with the filar micrometer of the large equatorial. Mr. W. C. Bond remarks, that nearly thirty years have elapsed since the period of revolution was ascertained to be about forty months or a little more than three years. Its recent returns have therefore been carefully observed by astronomers, as by them the truth of the theory of a resisting medium, proposed by Mr. Encke, will probably be ascertained. The Comet is coming towards the earth and we shall see more of it, if the clouds do not prevent. It is described as a faint white nebula, with a brilliancy capable of bearing only the faintest illumination.

Sulphur Springs near Norfolk.

A sulphur spring, recently discovered on the farm of David Jordan, Esq., in Nansemond County, Va., fourteen miles from Norfolk, is said to have been pronounced by Professor Stewart, of Baltimore, to whom the test was confided, to be probably one of the most efficient and valuable medicinal waters in the world. It combines the property of the Saratoga with that of the White Sulphur waters, and may be said to represent perfectly the water of the far famed Harrowgate Spring.

New Telegraph.

A system of nautical telegraphs has just been tried at Nantes, with satisfactory results. The basis of this system, which was invented by the captain of the port of Dunkirk, consists in having 72 signals made by means of objects always at hand on board every ship. Thus, by means of a napkin, a ball of tow, a basket, and a hat, several important orders were given at Nantes.—[Ex.

[This is not a very extraordinary affair. All nautical telegraphs are made out of things always on hand on board of every ship.

To Prepare a Varnish for Coating Metals.

Digest one part of bruised copal in two parts of absolute alcohol; but as this varnish dries too quickly, it is preferable to take one part of copal, one part oil of rosemary, and two to three parts of absolute alcohol. This gives a clear varnish, as limped as water. It should be applied hot, and when dry, it will be found very hard and durable.

To Prepare a Varnish for the Scales of Thermometers.

One part of copal, one part of oil of rosemary, and three parts of oil of turpentine, recently rectified or digested with sulphur.—After a moderate digestion, the varnish is ready for use. This varnish dries quick, but is not so hard as the preceding, although it resists the action of the air and atmospheric influences.

For Varnishing Leather.

Six parts of oil of turpentine, saturated with india rubber, two parts of oil of rosemary. This varnish should be applied somewhat fluid, and always dried at a high temperature.

Frazier's Excavator.

Mr. Frazier, an engraving of whose excavator we published in number 17, writes us, that with a four horse-power engine, it will excavate from four to five hundred yards per day of mud or earth, and with a ten horse-power engine, it will take out from nine hundred to one thousand yards. It can excavate to the depth of fifteen feet below the surface. It is an improvement which will soon commend itself to the public.

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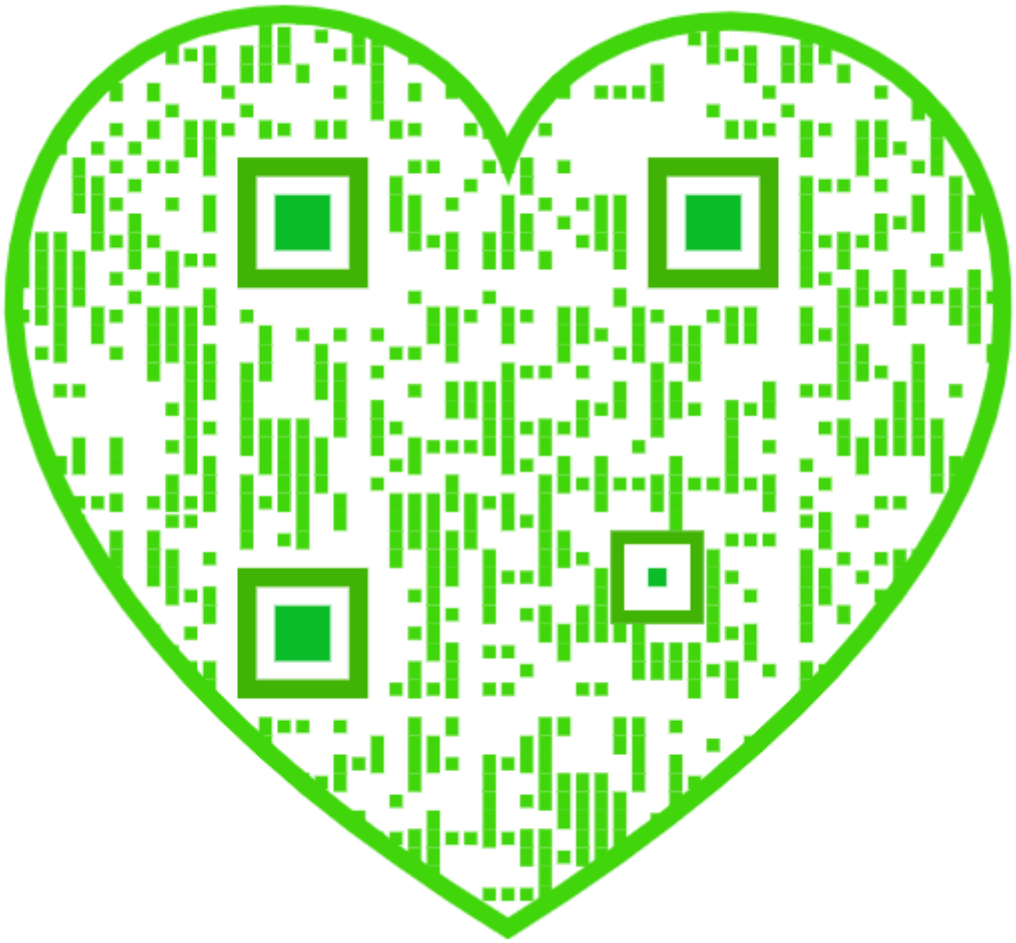

MISCELLANEOUS.

(For the Scientific American.)

Steam Carriages for Plank Roads.

Two articles have appeared in your journal on Steam Carriages on Common and Plank Roads, the first of which has been consigned to the care of Mr. Fisher; the second, apparently, is from a "Nameless" correspondent at Williamsburgh, to whose generalities, on what he has been "informed," it is not intended to reply in detail. But he may be told that the main reason why Gurney's and other steam carriages were laid aside in England, were, first, that during the period of their trials, the trustees of the turnpike roads, forgetting that horses' feet wore the roads more than wheels, charged such exorbitant tolls on steam carriages as to make their use a losing concern. For proof of this your "Nameless" friend is referred to the Report of a Select Committee of the House of Commons, 1831. Secondly, he may be informed, on the same authority, in No. 7 of their conclusions, "that they will become a speedier and cheaper conveyance than carriages drawn by horses;" and, thirdly, he may be informed, by reference to the Parliamentary Reports, from 1825 to 1833, that the agricultural interest at large, from the owner of the land to the laborer who worked under the farmer, opposed the introduction of both railroads and steam carriages on common roads; believing, in anticipation, that their monopoly of growing horse-feed would be ruined; and during this opposition the patents of Gurney and others ran out, railroads were extensively developed, and it was believed more profitable to invest money in them and in building locomotive and other machinery for them, than to run steam carriages on common roads, without the protection of a patent, under which profit could be made, because competition could be excluded; and yet, on the terms noted above, they could be worked speedier and cheaper than carriages drawn by horses.

There are no such ideas entertained as those assumed by "Nameless:" it is not intended to "plow through mud," nor is the "plan" a "scintillation of days gone by;" and it is believed experience will demonstrate the fact that plank roads are not entirely for our farmers. Take the Erie Railroad alone, and there are many points whence plank roads, branching north and south, will both enable the farmer to place his produce on the railroad, on its way to New York, and a competent steam carriage to bring the travelling community to the same point of the railroad, until the wants of the farmers and travellers demand a branch railroad, of which the plank road and steam carriage will be the certain precursors.

"Nameless" does not state that he has examined the proposed plans, and yet he condescends to condemn them wholesale, by the assertion that "no one will pretend to say that the improvements are worth fifty per cent." Is not "Nameless" very near the condition of those who, twenty-five years ago, wrote and published ponderous tomes to prove, by theory, that the traction on iron rails would not enable the locomotive to move a load? Or, like another, who prognosticated that ocean steam navigation could not be practical? The man who, during this century, attempts to assert that any reasonable mechanical object cannot be attained, stands a chance to be contradicted by results.

It may now be due to the public, and to myself, to say, once for all, what induced my consent to be associated with the undertaking which "Nameless" condemns in generalities.

Some months since, Mr. Fisher called on me, and showed me his model and drawings; my general knowledge of what had previously been done, led me to believe that the arrangement of the boiler would admit the use of anthracite coal, which I knew to be better than the coke used by Gurney and others, as it does much more work in proportion to cost and weight; and I considered the simplicity of Mr. Fisher's mechanical arrangements to compare advantageously with any others I had seen. I was then, and not before, informed and shown, that my opinions were supported in detail by such men as H. R. Dunham, C. W. Copeland, James Bogardus, and Mr. James Stone (who was Gurney's machinist)—all sound practical mechanics,—and by Professor Renwick and Henry Meigs, both of whom, if not practical mechanics, are well informed on mechanical matters; and shortly afterwards I consented to act with four gentlemen, who stand favorably before the public, in the organization of a company, by which sufficient funds should be raised, to assist Mr. Fisher in proving the invention, by building one carriage and setting it to work; then report the results to the body of the subscribers, and abide by their decision as to future proceedings, which decision will, of course, be based on the facts practically presented to their judgment; and so far as my influence goes, these proceedings shall be faithfully carried out, by the proper expenditure of a first small installment of five per cent., so that the shareholders shall act understandingly on any further expenditures of their money.

Having stated so much over my name, I now take leave of "Nameless," intending, for the future, not to notice animadversions of any character whatever, that come from behind a screen, as I do not admit the right of any person to an answer who publicly attacks the pending proceedings of others, and stigmatizes them as a "speculation," neither "plausible" "nor payable," who deals in generalities; and who does not state one fact to show that he is acquainted with the subject matter, or the intentions of those he attacks; and who, finally, has not the manliness to sign his name to his lucubrations. Yours respectfully,

WM. SERRELL.

289 Broadway, N. Y., Jan. 14, 1852.

[Mr. Bennett, of Sandy Hill, also writes an answer to the correspondent of Williamsburgh. It is to confute his assertions about Gurney's experiments having failed to compete with horses. He says the cause of failure was an act of Parliament, passed in 1831, charging double toll for the steam in comparison with horse coaches, since which time, he says, nothing further has been attempted in England on the subject. He also refers to the opinions expressed in the report of a Parliamentary Committee. He believes that much money has been expended on things long since exploded, and all who can should give advice, but such advisers, he says, "should be careful that they understand the cause of past failures." He says, "I do not believe that steam carriages on common roads can ever compete with our railways, but I do honestly believe they can compete with horses even here in the United States."

It is evident that Mr. Bennett is not acquainted with what has been done since 1831. Those who place confidence in the Report of the Parliamentary Committee spoken of, do not judge said Report as we do. Since it was made, steam carriages have been tried in Britain, even so late as 1849. We have no wish to extend the discussion, our opinion has been expressed on the subject already. We will be glad if it prove to be incorrect. It is for those who have expressed other views to prove themselves in the right. This surely will not be hard to do, for the amount required cannot be very great.

Cure for Deafness.

Mr. S. W. Jewett, writing to the Boston Cultivator, says:—

At about three years of age, a daughter of the Hon. Daniel Baldwin, of Montpelier, became very deaf in both ears. In conversation it was quite difficult to make her hear, and she continued in this wretched state until about eighteen years of age, when an Indian doctor chanced to see her, who told the mother, Mrs B., that the oil of onion and tobacco would cure her if prepared as follows:—Divide an onion, and from the centre take out a piece the size of a common walnut; fill this cavity with a fresh quid of tobacco, and bind the onion together in its usual shape; roast it, then trim off the outer part until you come to that portion slightly colored or penetrated by the tobacco; mash up the balance of the tobacco; put it into a phial. Three drops of this oil, Mrs. B. informed me, she dropped into the ear after her daughter had retired to bed, which immediately gave her considerable pain which lasted for some time. Before morning however, her hearing was so extremely delicate and sensitive, that she suffered by the sound and noise in common conversation! This she soon overcame, and for more than three years past her hearing has been entirely restored, to the great joy of her parents and friends!—Having been acquainted with the family for many years, the case is so miraculous and gratifying, that I cannot, in justice to the afflicted, refrain from making this simple and effectual remedy for deafness known.

Circular Saws.

It was our intention not to present anything more on this subject, but we publish the following letter for the last, and present it because it treats upon points not mentioned in any of the former articles on this subject. The information here presented is very useful and important:

[For the Scientific American.]

SANDUSKY CITY, Ohio.

Having seen several articles recently, in the Scientific American, in relation to Circular Saws, I propose more particularly to answer the inquiry of your first correspondent, viz., how to prevent circular saws from heating.

What I am about to say is the result of some ten years' experience in building and using not only circular saws, but various kinds of machines for working in wood. I think all mechanics of experience will agree with me when I say that practical experience, so far as the minutiæ of the matter is concerned, is, alone, far better than theory alone,—but the two combined, and well understood, are of course the best: but give me practical knowledge when real utility is the end to be attained, in preference to the best theory in the world.

The first thing necessary, in constructing a good working circular saw, is to have the arbor to which the saw is attached fitted up with the utmost care; it should be made of cast-steel, and great care taken to have the journals in line and perfectly round; the journals should be in length from 3 to 5 inches, according to circumstances, and as small in diameter as may be, keeping in view sufficient strength; this will hold good in all machinery for great speed. Iron is not fit for saw arbors, nor for shafts for any kind of light machinery having great speed, for the reason that it is almost invariably uneven; that is, it will be hard on one side and soft on the opposite side, the consequence of which is that it is next to impossible to produce a round uniform journal, and if a good journal should be obtained, it is soon worn untrue in consequence of the unevenness of the texture of the material of which it is made. The use of cast-steel obviates this difficulty. In selecting saws, I take the utmost pains to choose such as are straight and not winding, for the collars on the arbor will not straighten a winding saw; if a saw is not true, it presents an inclination from a direct line, upon which the resistance of the atmosphere will have the same effect as that produced by the action of water upon the blades of a screw propeller, the result will be a vibration or shirring of the saw, which causes that ringing sound so often heard when saws are running. In setting a saw, care should be taken to set it so that the surfaces of the saw will not come in contact with the timber through which it is passing.

My plan for setting a saw is to set one tooth at the desired angle, by the eye, then I take a thin piece of hard wood, and tack it on to the saw table, so that it will touch the tooth that I have set, I then set all the teeth on that side of the saw to the stick, and proceed in the same manner with the other side. If the surfaces of the saw come in contact with the wood while passing through it, a hot saw will surely be the result of the friction produced, and I doubt whether your correspondent's jets of cold water could keep it cool My manner of filing a splitting saw is to file the teeth as hooked as I can without impairing their strength. I bestow all the care of filing upon the forward or cutting side of the tooth, which I file a little angling, so as to have the outer corner of the tooth a little the longest; or, to make it more plain, I find no difficulty in making a saw run straight through hard, cross-grained, wet, or dry timber.

The shop in which I am engaged (which, by-the-way, is not a small affair) has one of Crosby's panel mills in operation, which I file in the same way as described above. I have seen the same kind of mills at work in the State of New York, but I have never seen one which did its work equal to this one.

I have never been troubled with hot saws since I have followed the manner of filing and setting which I have described above. The journal blocks or boxes, I find, work best when made of a composition of tin and zinc, about equal parts of each. Each has an oil cup of considerable capacity, on top, which I fill with cotton, upon which I pour the oil. This cotton answers a two-fold purpose—it keeps out all gritty substances, and at the same time is a constant lubricator. We use lard oil in this part of the country, which I think far preferable to the best sperm, as there is less of the waxy glutinous substance contained in it, which causes so much trouble in keeping machinery clean when oiled with fish oil. As I remarked at the commencement of this article, the foregoing is the result of years of experience, and if it will be of any use to mechanics they are welcome to it. To many mechanics there is nothing in this article that is new, but to some it may be of use, which is the only apology that I offer for intruding upon your notice. O.

Hydrogen Gas.

The gas used in lighting cities is hydrogen driven out of coal by heat. It is the lightest of all known substances, and forms the principal ingredient of water.—[True Flag.

The above is far from correct. The gas used for such purposes is composed of equal parts (by weight) of hydrogen and carbon, and is as distinct from pure hydrogen in its properties as common air and nitric acid (aquafortis), which are the same ingredients combined in different quantities. It is commonly called olefiant gas, and has been called hyduret of corbon, bicarbureted or percarbureted hydrogen; but 2-2 carburet of hydrogen is the proper name for it, according to strict chemical nomenclature. Hydrogen, to be sure, is lightest of all known substances, but olefiant gas is but two-hundredths lighter than common air, and compares with hydrogen in the proportion of 980 to 68. Though hydrogen forms two-thirds of water, by measure, it is but one-ninth of it, by weight.—[Pawtucket Advertiser.

[Right, friends of the Advertiser. If hydrogen alone was the gas driven out of coal, gas would be rather expensive, and a bat's-wing burner worse than a rush light.

The proprietors of the Philadelphia Ledger have contracted with Messrs. R. Hoe & Co. of this city, for the construction of two mammoth eight cylinder printing presses, similar to the one which has been in use in the New York Sun establishment for about two years past. The cost of these presses will be forty thousand dollars. A seemingly large sum for a penny paper to pay for presses. The Philadelphia Ledger has a very large circulation, and is deservedly popular.

The Dollar Weekly newspaper, by the same publishers, is one of the cheapest and best conducted family newspapers now published.

We suppose the Ledger and New York Sun have the largest circulation of any daily papers in the world.

Star Fish.

Prof. Holmes, of Charleston (S. C.) College, has lately discovered some very interesting specimens of star fishes on the coast of South Carolina.

Professor Agassiz, to whom they have been submitted for examination, and who has studied this group of animals with his usual skill, believes them to be the first and only species that has been found upon the Atlantic coast of the United States.

Cold Weather.

From all quarters, the news which appears most striking, is the coldness of the winter season. In New Orleans it has been colder than any winter for twenty years, and there have fallen six inches of snow. In many places in New York State, the thermometer has been at 28° below zero—the mercury was frozen.

Sleeping Fever.

An epidemic disease bearing this singular appellation, has broken out with terrible fatality in Gallicia.

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(For the Scientific American.)

Intervention---Science.

Intervention or non-intervention, that is the question. Whether it be better for this model Republic, which boasts itself as the cradle, conservator, and propagator of liberty, the defender of the rights of man, the missionary of intelligence, the pioneer of progress, to interpose its giant arm, and rescue the struggling sons of freedom on the Danube from the jaws of the Northern Bear, or keep aloof and witness the throes of expiring liberty?—this is the all-absorbing query of the day. We leave the decision, of course, with our legislators, merely giving our humble opinion that this country ought to interfere.

But there is another kind of intervention to which we are decidedly opposed. It is the intermeddling of the literary in the affairs of the scientific world, and vice versa,—the officious interposition of the penny-a-liner, or of one who has never opened the great Book of Nature, to adjust the apparent difference of ologists, by either giving a theory of their own or condemning the whole. Many are now walking the earth, who verily think those who deal in the mysteries of the material universe, *i. e.*, scientific men, are a genus of fanatics and forever harp on any seeming discrepancy or statement which conflicts with what they term reason. The spirit which starts these intrusions is often one of sudden anxiety for the safety of religion. Mathematicians, they say, are prone to skepticism; but they only can read those marks of design and unity which argue the being of a God. "Copernicus and the Septuagint will never agree," said the bigot; and poor Galileo must recant. Jealousy eyes Chemistry, since it announces that the world cannot be burned, the greater part having already been oxidized. But no science has more excited the fears of the illiterate and drawn forth greater specimens of their ignorance, than Geology. They would reconcile its votaries and harmonize its principles with revelation by consigning the whole to oblivion. Time and again have these lines been their fort:

"Some drill and bore
The solid earth, and from the strata there
Extract a register, by which we learn
That He, who made it and revealed its date
To Moses, was mistaken in its age."—Cowper.

In the Poet's day Geology was in its infancy, and had, we admit, *some* reckless advocates; but the statements of the sacred historian "meet the most hearty concurrence" of all modern geologists. When talent comes into the field of fair discussion, it will be met; but when ignorance shoots her bombshells, it is insupportable. In 1842, John Budge, "a practical miner," in the bowels of mother earth, made an ascent to the world, and thus threw down the gauntlet against the champions of this science:—

"How these talented infidels try all they can to sap the foundation of the Christian's faith!—Their first, second, and third formations. One thing produced by another. Coal formed of vegetable matter, and lately they have discovered that slate is a marine production! I declare I know not a single instance where any good has emanated from their exertions to the value of a swabbing-stick! How amusing to the practical miner it is to read 'The Transactions of the Royal Geological Society,' and to see how wild, erroneous, and contradictory their notions are! Not one of them is valiant for the truth, *i. e.*, cotemporaneous creation."

Query, Mr. B.,—if fossil shells were never inhabited by shell-fish or if fossil teeth were never intended for mastication, what becomes of final causes? Science is the handmaid of Religion, and so illuminates the world that we can discern the foot-prints of a great Creator. The fact is, the pick-axe would better befit such persons than the pen, and this should be their motto, *Ne sutor ultra crepidam.* "Let not the shoemaker go beyond his last." To be sure, truth will not suffer from their inept and unscientific gunnery, nor can able investigations be set aside by ridicule; but human nature is demeaned when one man spits fire at another simply because his taste runs in a different channel. The man who turns the clod is called a farmer; but if he meddle with the rocks below, just to look at them, he is stigmatized an atheistico-fanatic. Men of science, like others, have their differences, but they are not decidable by arbitration or force. Geologists will settle their own disputes without the mediation of those who take "no particular interest" in Geology; Science will fight her own battles without the intervention of ignorance. J. W. O.

Great Improvements in Photography.

Mr. William Henry Fox Talbot, of England, the discoverer of the Talbotype, which bears his name, and a cotemporary inventor with Daguerre, has recently taken out a patent for improvements in photography, which are of great value and of importance to artists. The following is the substance of the specification:—

"The first part of this invention consists in obtaining photographic images on plates of glass prepared by the following means:—A plate of glass should be selected having a smooth and well-polished surface; and in order to obtain a photographic picture the operator proceeds as follows:—

He takes albumen, or white of egg, and mixes the most liquid portions thereof (rejecting the rest) with an equal quantity of water, and having spread the mixture smoothly and evenly over the surface of the glass, allows it to dry spontaneously, or dries it at a fire.

He mixes an aqueous solution of nitrate of silver with a large proportion of alcohol, so that the mixture shall contain about three grains of the nitrate to each ounce of liquid. (This proportion may be varied from one to three grains in the ounce of liquid; but three grains is considered to be the best proportion.)

He dips the prepared plate for a few seconds into this mixture, then withdraws and dries it by a gentle heat, or allows it to dry spontaneously.

He dips the plate into distilled water, to remove any superfluous nitrate of silver.

He applies a second coating of albumen in the same way as above directed, and dries the plate by the application of gentle heat, avoiding the use of too much heat, by which the nitrate of silver might be decomposed.

He takes an aqueous solution of protiodide of iron, containing 140 grains of the protiodide to the ounce of water. A small quantity of free iodine in the solution, by which its color would be rendered slightly yellow, will be found to be of advantage. To one measure of the solution he adds one of acetic acid and ten of alcohol, and allows the mixture to stand for a few days previous to use.

He dips the plate into the solution, or allows the liquid to pass over the whole of its surface in a continuous stream. It is then dried, when it should be of a pale yellow color, very clear, and uniformly transparent; and this completes the preparation of the plate. All the preceding operations may be performed in moderate daylight, but avoiding exposure to too strong a light, or to sunshine.

When it is desired to obtain a photographic picture, the operator takes a solution of nitrate of silver containing one hundred grains of nitrate of silver to an ounce of water, and, having mixed two measures of the same with two of acetic acid and one of water, he dips in the plate once or twice, for a few seconds each time (performing the operation in a darkened room or by candle light), for the purpose of rendering it sensitive. If the weather is cold, the plate should be slightly warmed before so dipping it. He then removes it to the camera without loss of time, as the plate ought to be used a few minutes after taking it out of the solution; and when a sufficiently strong photographic image is supposed to be obtained, the plate is transferred from the camera to the dark chamber or operating room.

It is then immersed in a solution of sulphate of iron, composed by mixing one measure of a saturated solution thereof in water with two measures of water (but the solution may be stronger or weaker, at the discretion of the operator), by which the previously invisible images will rapidly be rendered perceptible.

The plate is then washed, and dipped in a rather strong solution of hyposulphite of soda in water, which, generally, in about a minute, renders every part of the image more distinct and visible. The picture is then washed in distilled water, and the surface of the plate may be cleansed from any particle of dust, or other impurities, by rubbing it gently with cotton dipped in water; and if the above-described operations have been properly performed, the surface of the plate will not be at all injured by this cleaning. The picture is then dried, and the operation is then finished. For the purpose of better preserving the picture, the plate may be covered with a coating of albumen or fine transparent varnish.

Although throughout the above processes certain proportions of chemical substances have been named, they may be varied very considerably, as is also the case in photographic operations generally.

The images obtained by his improved method Mr. Talbot calls, "Amphytypes," because they appear either positive or negative, according to the circumstances of light under which they are viewed. Thus, if held against a bright light, or against a sheet of white paper, they appear negative, and the reverse when held against a black surface and seen in oblique reflected light. It is in the power of the operator, by varying the proportions of the chemicals employed, to obtain at pleasure positive images more or less distinct in comparison with the negative images. When it is intended to copy the image on paper, it is desirable to obtain as strong a negative as possible on the glass plate, which is then copied on the paper, to produce thereon a positive image in the usual manner; but when the operator wishes to have a picture on the glass, he should endeavor to obtain a strong positive image. When this is obtained to his satisfaction, it may be preserved from injury and from contact of the air, by pouring black paint over the pictured side of the plate, and then by turning the glass the picture will be seen correctly, and not reversed as regards the right and left sides. This method of blacking one side of the plate is not however any part of the present invention. Throughout the specification the words negative and positive are made use of in the sense in which they are generally employed by photographers, viz., a positive image is that in which the lights and shades of the object are represented by lights and shades on the photograph, and a negative image is that in which a reverse effect is produced.

In fixing the images on paper, it is recommended, after washing them, to immerse the paper in a hot solution of iodide of potassium, before dipping in the solution of hyposulphite of soda, by which means a better fixation of the image will be obtained.

Under this branch of his invention Mr. Talbot claims the mode of preparing the glass plates, especially the use of a weak solution of nitrate of silver immediately after the first coating of albumen; also the conjoint use of protiodide of iron and sulphate of iron upon albumized glass plates; and also the simultaneous production upon glass plates of images, which are both positive and negative according to the light in which they are viewed.

The second part of this invention consists of obtaining, under certain circumstances, the photographic picture of objects which are in rapid motion. An electric battery of the greatest power which can be conveniently obtained, is arranged in a darkened room, and, supposing the moving body whose picture is required, is a wheel revolving upon its axis, the camera is placed at a convenient distance from it, and adjusted so as to have the image of the object in its focus. A glass plate is then taken, which has been previously prepared in the way described above, and it is rendered sensitive with nitrate of silver in the way also above described; it is then placed in the camera, and the electric battery is discharged, producing a sudden flash of light, which illuminates the object; the image thus taken on the glass plate is then rendered visible and the process finished, as before directed. If the process is properly conducted, a distinct positive image of the moving body will be seen upon the glass, the rapidity of the motion not affecting the accuracy of the delineation."

[We presented a brief notice of the second part of this invention on page 3, this Vol., Sci. Am.

Leap Year.

This notable year of 1852 is one of especial privilege to the fair sex; it is leap year. In olden time the ladies went a-courting in leap year. At present they have more backwardness, but they have just as much right, and we advise them to stick to their privilege; don't give up the ship.

The Air Rendered Visible.

The Paris correspondent of the Washington Republic says:—

"At the last sitting of the Academy of Sciences, a very remarkable paper was read. It was presented by a well known engineer, M. Andraud, who has made many public experiments on compressed air as a substitute for steam on railways. I gave you a *resume* of the contents of this paper. It is entitled Æroscopie, or the visibility of the Molecules of the Air. Some of the deductions made, in a medicinal point of view, are in the highest degree curious. M. Andraud proves that, by a very simple contrivance, the air is rendered visible. By taking a piece of card, colored black, and piercing it with a fine needle, this interesting fact is established. If we look through this hole at the sky on a fine day, or at a strong lamp having a ground glass shade, we see a number of transparent globes moving in the midst of confused nebulosities. These little globes, some of which are more transparent than others, are molecules of air. Some of them are surrounded with a kind of halo. These latter, says M. Andraud, are the elements of azole. After continuing the observation for some time, we shall see small points detach themselves and disappear in falling; these, says M. Andraud, are atoms of carbon. This phenomena of vision, it is essential to remark, passes within the eye itself; the molecules of air observed, are those which float in the liquid, which occupies the interior part of that organ. According to the author of this paper, the discovery is not interesting merely as a phenomenon, but may be applied to important purposes in medicine. He says:—'The physician will one day make use of the æroscope as an important means of diagnosis.—Vertigo, giddiness, which are the forerunners of apoplexy, will be announced by the perturbation in the molecules. Fever always exists when the molecules, under the action of a magnetic current circulate on a vertical ground—sometimes in one sense, and sometimes in another; and, when this movement of gyration becomes more precipitate, the patient experiences the singular sensation of turning, as it were upon a wheel of ixion. I cannot resist remarking that, in most cases of opthalmia, a prompt cure might be effected by securing the eye completely against contact with the external air; for inflammation (which is only an oxydation) is kept up by the too abundant absorption of our molecules of air, which is effected by the pores of the prunella; this absorption being prevented, the malady must cease. This observation may apply to all cases of inflammation, for the air is an element of which the affected part must be deprived.

[It is our fortune or misfortune, we cannot tell which, not to obtain the same results with a black card as M. Andraud, nor can we acquiesce in his conclusions. The same kind of globules are seen when the eye is strained or pressed.

Geology.

At the December meeting of the Boston Society of Natural History, Mr. Teschemacher exhibited a specimen of anthracite coal, containing a flattened branch of Stigmaria, one foot in length, and three inches in diameter, with the usual marking of cicatrices of foliage, two of which were very perfect. Mr. Desor exhibited some of the proof-sheets of the illustrations to Messrs. Foster and Whitney's Report of the Geological Survey of the Mineral Lands of Lake Superior. Among them was the representation of a slab of singular character, from the Clinton group at Green Bay. It was a question whether the marks upon it were the remains of a fossil body, or the track of some animal. The same gentleman also presented, in the name of the Geologists of the Survey, a Geological Map of the Lake Superior district, and pointed out and explained its different features. He remarked that the immense cedar swamps of that region, he thought, might at some future day be of value for the sleepers of railroads, from the indestrutible character of the wood.

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NEW INVENTIONS.

Quartz Crushing Machinery.

Mr. Charles R. M. Wall, of New York City, has invented and taken measures to secure a patent for a new improvement in machinery for crushing quartz and other ores; it consists in crushing and pulverizing quartz, &c., by passing it between a series of corrugated rollers, said rollers being placed in a vertical position, in the form of a cone, with the finer corrugated ones placed lowest, and the whole enclosed and working in water. A column of water presses down in the centre of the cone between the rollers, but no water passes in a current. The water assists in pressing the particles to the points of contact between the rollers, and it has been found to greatly facilitate the crushing of the quartz, besides enabling the machinery to work much easier.

Improved Cast-Iron Car Wheel.

Mr. Orson Moulton, of Blackstone, Worcester Co., Mass., has taken measures to secure a patent for a useful improvement in Cast-iron Wheels for railroad cars, which consists in connecting the hub and rim by two curved plates, having projecting ribs running in cyma form on their inner sides, from the hub to the rim, and aoross the inside of the rim, the ribs on each side being placed opposite the middle of the spaces between those on the opposite side; this, it is said, provides for the unequal shrinkage of the metal in every direction. The extension of the ribs across the inside of the rim gives it great strength.

Improvement in Cotton Felting.

Mr. E.P. Rider, of the city of Brooklyn, has made a good improvement in cotton felting, to be used principally for upholstering. The nature of the invention consists in laying a bat of cotton on each side of a glazed sheet, the bat of cotton on each side of the glazed centre serving as a nap, which thoroughly protects it, and thus prevents the centre from being broken by friction, or otherwise, and thus it is greatly improved for upholstering purposes.

Measures have been taken to secure a patent.

Improved Paddle-Wheel for Steamboats.

Mr. James Hardie, of Victoria, Texas, has taken measures to secure a patent for an improvement in paddle wheels for steamboats. The improvement consists in making the buckets enter and leave the water in a vertical position. It is not like the feathering paddle, the paddles not being turned edge outwards, but merely changed to a vertical position, so as to enter the water in that position, and maintain it, while passing through the water. The cost of the wheel will be but little more than that of the common kind. The improvement is very simple, and consists of but a small alteration: all the parts can be made strong and durable. It is the best one we have yet seen of the kind, and we believe it will work well.

Improved Screw Wrench.

Jehiel K. Hoyt, of this city, has taken measures to secure a patent for an improved Screw Wrench, which relates to those wrenches in which the inner jaw slides on a bar which connects the outer jaw with the handle. The improvement consists in connecting the adjustable screw, by which the jaws are opened and closed, to the sliding or inner jaw, and allowing it to pass into the handle. The nut that operates on the said screw being placed outside of the handle in a suitable position for being turned by the thumb and finger of the operator.

Increase of Inventions---Patent Agents.

A late number of the Boston "Carpet Bag" says:—

"There are some countries which do not grant protection to invention, and as a consequence the arts are in a very crude condition, and progress in civilization very tardy. It is but a few years since the profession of Patent Agents obtained a distinct recognition, and it is, perhaps, one of the most difficult to acquire. Inventors, as a general thing, although fertile in genius, and imagination, are seldom competent to grapple with the business for preparing papers for their own inventions. Among the requisites necessary to constitute able Patent Agents, is a clear knowledge of mechanical philosophy, chemistry, and Patent Law, and as there are few who combine these positive essentials, the reason why so few succeed in the profession is made apparent. The publishers of the Scientific American are well known throughout the world as among the most able and accomplished Patent Agents in the profession, and since the introduction of this business into their concern a very large increase has manifested itself in the number of inventions yearly presented to the Patent Office, and the stimulus given to inventive genius throughout the country by that powerful auxiliary, the Scientific American, has doubtless been the means of increasing two-fold the business of every respectable Patent Agent."

Ex-Commissioner Burke,—good authority—has said the same for the Scientific American. Mr. Ewbank would not deny the fact. He knows what it is doing for the Patent Office, as well as what the Ohio Cultivator is doing for the wheat growing interests.

PATENT GEOMETRIC TRANSFER.

Figure 1.

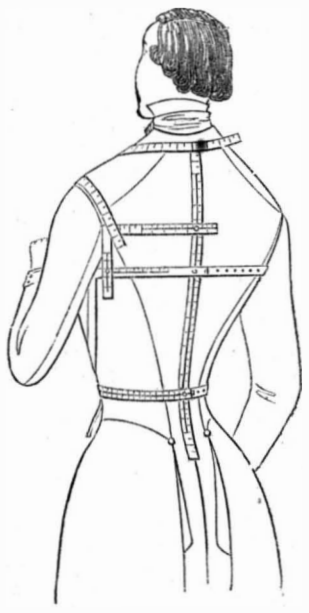
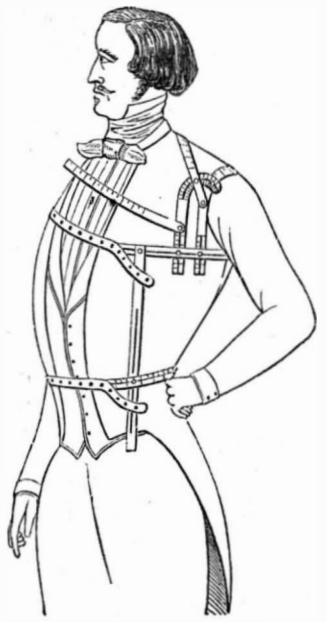


Figure 2.

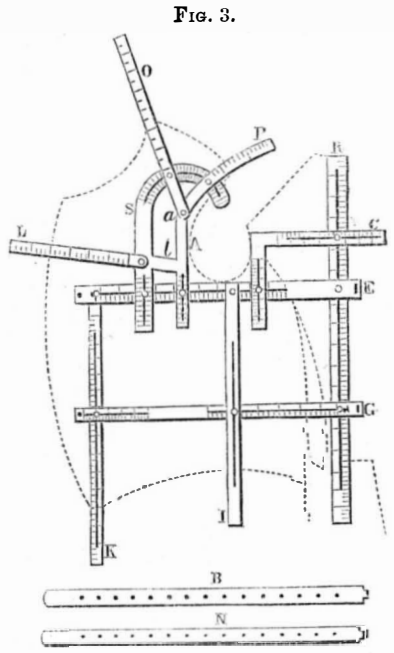


The accompanying engravings represent an instrument for Tailors to measure persons, in such a manner that garments can be cut for them with the utmost accuracy to suit the "human form divine." It is the invention of Mr. James Maginnis, of Lockport, N. Y., and was patented on the 2nd of last December. The claim is on page 102 of this Volume of the Scientific American.

Figure 1 shows the instrument set to the back when the measure is taken. Figure 2 shows its application to the breast and shoulder. Fig. 3 is a view of the instrument as set to the form of the body of a coat—the dotted lines representing the coat body.

R is a strap that extends from the socket bone of the neck to the waist, parallel with the back seam; E is a strap that extends from the centre of the back to the breast; B is a strap that clasps into strap E, at the back, and is carried around and hooked into it in front,

Fig. 3.



as represented in fig. 1. G is a strap that extends from the centre of the back at the waist to the front; N is a strap that clasps into strap G, at the hollow of the waist, and is carried around and hooked in front; straps N and B serve to hold the instrument on the body; they are set apart below, but are used along with G E. C is a square that slides on straps, R and E, from the centre of the back to the armhole. A and S is a gauge, with two arms connected by a cross-bar, G. In the figure, two straps are attached to the top of the inner arm; these straps serve to measure the length of the shoulder; the outer arm passes up and forms a semicircle over and around the top of the inner arm; this semicircle is slit through the centre, and forms a way for the shoulder straps to turn on; this gauge slides backward on strap E, from the front, and locates the front of the arm-hole, and gives its diameter the pitch of the shoulder and width of the breast. L is a strap that is attached to the cross-bar of the gauge: it turns on a pivot and serves to measure the width of the breast and its height. *o* is a strap from the pivot, *a*, on the top of the inner arm of the gauge to the socket bone of the neck; this strap measures the length of the upper point of the shoulder, and gives its forward and backward pitch. P is a strap that measures the length to the lower point of the shoulder. K is a strap that measures the length of the breast, from the strap S, the distance that a coat is carried in at the waist is thereby determined.

This instrument is made of spring brass and is so arranged that it contracts or expands to any form or size, so as to give a complete graduation of sizes, from the smallest boy to the largest man, it being numbered in inches and quarters; it can be set to the form of a perfect coat of any size without taking the measure, hence it is a complete set of patterns, and is of great service and utility in cutting ready-made clothing; being composed of a metallic substance it gauges the body in all its parts, and by unhooking it in front it springs out straight and becomes a pattern, which transfers the shape of the individual, as well as his size, to the cloth.

Mr. Maginnis has used this instrument for the last nine months in obtaining the form of the human body, and transferring it to cloth; and he can draft a coat by it better and in less time than by any other mode. Twenty-five Cutters in the vicinity of Lockport are now using it. and they concur in pronouncing it to be the most perfect instrument of the kind they have ever seen.

We have stated more than once, in our columns, that "Genius is democratic," and it is our aim to set forth the merits of our inventors and mechanics, without distinction of trades, or the departments in which they exhibit mental qualities. Some journals professedly devoted to science, really do not know what it is, and do great injustice to many men. They seem to think that deep sounding words and devotion to a few *branches* of science are the alpha and omega of all science. We consider that there is as much genius displayed in the invention of a Tailor's Measure as there is in the construction of a bridge or a steam engine. In invention and science, we view no high and no low class. We know that intelligence and worth are not the exclusive property of any one class—these qualities belong to men, not trade nor rank. We know that our inventors, generally, stand high in point of intelligence.

That man who endeavors, honestly, to do all things well—the best way, irrespective of what he is engaged in—is a great man; he is living to some purpose; he is fulfilling his true and noble destiny. To every one of our mechanics we say, "strive to do all things well." One trade is not more noble than another,—there is as much geometrical skill and genius displayed in the foregoing instrument as in the resolved problem of an Oxford sage. We have been led to make these remarks by some nonsensical expressions that never would have been uttered by an intelligent and scientific man, but which lately appeared in a certain journal with a flourish of vapid aristocracy, not the genuine kind, for *it* belongs to *men* in all stations.

More information may be obtained about rights, &c., for the above instrument, by letter addressed to Mr. Maginnis.

At What Price Gas may be Produced.

At a public meeting held at Sheffield, the other day, on the question of forming a new gas company, it appeared, from an estimate presented by Mr. Laidlaw, of Glasgow, gas engineer, of the cost at which gas may be produced, that after allowing for all contingencies, the gas could be sold at 3s. per 1000 feet, and if there were one hundred millions sold, it would give the shareholders a dividend of at least 7½ per cent. Mr. Flintoff, of London, stated that estimates laid before Parliament, in 1847, showed that for a consumption of twenty-eight millions, the price ought not to be more than 3s. 2d., paying 10 per cent. A party employed by the committee to test the figures formerly brought forward, informed them that gas could be made under 2s. 6d per thousand ft., and considering losses and other contingencies, they were justified in offering it at 3s., with a strong probability that in a few months the price might be further reduced to 2s. 6d, per 1000.—[Leeds Mercury.

[The above price of gas affords a great contrast to the price charged in New York. One thousand cubic feet at three shillings is equal to 66 cents. Our gas is now reduced, apparently as a favor, to 300 cents per thousand feet—just 4½ times as much; and had Mayor Kingsland not vetoed the shameful gas contract, they would in all likelihood have raised it to the old prices—$4 and $7 per 1000 cubic feet. The contract was for 17 years; what a shameful monopoly it would have been; that men can be found in our community who can advocate such measures, and, what is worse vote for them, is a very bad sign. If gas was $2 per 1000 feet, all our working people would use it, and it would prove a blessing to them. There would be no accidents from camphene, and there would be less fires. Community, in *toto*, would be the gainers. It is the duty of all to exert an influence in bringing about a reform in the gas line. There must be a door left open for competition. Every mechanic in Manchester and Glasgow has his domicil lighted with cheap, convenient, and clean gas light. Why cannot our people, as a whole, have the same advantages? They can,—they should. Let them try and have them.

Collins Line of Steamers.

A petition has been presented to the Senate to enable the Company of this line to increase their facilities for carrying out their government contract. We hope it will be granted; we require powerful and large steamships to compete with the old Cunard line. It is imperative that our country should have them, and as the Cunard line would be a failure without great patronage, so will the American Line.

A statue of George Stephenson, the celebrated engineer, is about to be erected at Euston, England.

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Scientific American

NEW-YORK, JANUARY 24, 1852.

India Rubber Over-Shoes.

Of all the uses to which India rubber is applied, none is so important and beneficial to the human family as the manufacture of it into over-shoes. A few years ago there was a strong prejudice against these shoes; they were called unhealthy and fit only for enervated men, and weak women. Well, even if they were beneficial to no others, if India rubber shoes had done good to only one individual, this should have blunted the edge of prejudice. But against prejudice they have won their way into sensible and universal favor. It is well known that during rainy weather, but more especially during a thaw, when the ground has been covered with snow, the best leather boots and shoes cannot resist the entrance of moisture. People take cold more readily, we believe, by getting their feet wet and chilled than by any other causes. How many people have we known, who, being compelled by circumstances to walk the streets in sloppy weather, have contracted cold from wet feet, and finally consumption. Weakly people have suffered the most from such ills of human life; to them, especially, India rubber over-shoes is one of the great blessings of physical discovery. They resist moisture,—they are impervious to wet; they keep the feet warm and dry when walking in the wet and cold penetrating snow, and they are therefore one of the greatest comforts. There are thousands of these India rubber overshoes worn now, for one pair that were worn fifteen years ago. They tend to prolong life, by keeping the feet warm and dry, thus preventing cold and disease, and at the same time, they pour drops of comfort into the cup of life. The great necessities of life—the main essentials to general physical happiness—are plenty of food, warm clothing, and dwellings. What would it signify if every man possessed a mountain of gold, if he could not keep his feet warm? A very poor consolation indeed. We are liable to overlook many things which have been done of late years to benefit the human family, and the claims of India rubber shoes have not been so fully acknowledged as they should be.

Ferry Steamboats and Ice.

Owing to the severity of the cold, during the present winter, the rivers which flow on both sides of our city have been unusually difficult to navigate. Huge fields of floating ice, some of great thickness, have greatly obstructed the regular ferries across both rivers. The breaking of wheel-shatts and smashing of paddles have been very common. It has been a time to try the quality of our ferry steamboats. In crashing through the fields of ice, the paddles have had free scope to batter away on hard, though floating surfaces. Many of the Williamsburgh boats have been laid up, and great delays have taken place, to the manifest injury of passengers, owing to their loss of time by irregularity of the boats. The Fulton ferry boats, to Brooklyn, have dashed away, as if the waters were free, and the channel were still. From personal observation, we are convinced, that if our ferry steamboats were fitted with guards for the paddles, like cow-catchers on our Locomotives, they would have far less trouble with floating ice,—less breakage, &c., and they would thereby save a great deal by having fewer expenses. Larger and more powerful boats would also be a saving to some ferry companies. It is surely evident to any man, that a small boat, with an engine of small power, must be subject to a greater amount of breakage, in such cases, than a large boat. The latter has a far greater power to overcome the resistances presented than the former. We would, therefore, request the attention of our Ferry Companies who have small and inefficient boats, to get larger ones, with more powerful engines. The price of original construction would be more to be sure, but they would save money in the end. We hope they will think of this, and act upon the suggestion; they will be gainers, if they do so, and so will the public.

Lead Poisoning.

The last number of the New Jersey Medical Reporter contains an article from Dr. Cleveland on lead poisoning. He describes the terrible state of a young man who was his patient, and who was covered with boils. Thinking the stomach was the cause of the disease, he took sulphur and cream of tartar in small doses for two or three weeks, without any perceptible result. He then took laxative doses of sulphate of magnesia for a week. It did him no good, he was terribly pained and nearly at death's-door. The doctor inquired into the history and invasion of the disease, and learned that he had been engaged in ornamental painting, and while using lead pigments had labored for hours together in a cold room, after which he would warm himself for some time in another room. He also resided in a new cottage, the internal walls of which were painted with colors mixed with lead. Months had elapsed, but by want of ventilation, the odor had not disappeared. He then suspected that lead was the cause of the disease, which had become complicated by injudicious treatment. The sufferer and his friends did not suspect either the occupation or residence as the cause of the disease, although they ranked high for intelligence and scientific attainments. Before attacking the colic, he pursued a course as for inflammation of the digestive tube. He ordered camphor water, 4 ounces; nitric acid, 4 drops; opium tincture, 1 drachm. Dose—one large spoonful as often as the bowels move. Injections of weak starch water and a little laudanum were given to allay irritation of the rectum.—

Cloths, wet with a strong infusion of mustard, were placed over the stomach for some time; then others wet with brandy and laudanum. Weak brandy sling was also given to keep him from sinking; he enjoyed a quiet night, but not sound sleep. The pain was allayed and the treatment was continued for two days, when the camphor mixture was neglected by the nurse for a few hours and he got worse. He was then ordered sulphate of quininia, 1 grain; cubebs, 2 grains; this was pulverized and given once every 6 hours. He grew better, and in two days was ordered to take elixir vitriol 1 ounce; sulphate of quininia 1 scruple. Dose, 15 drops in sweetened water taken before eating. He soon got better and recovered entirely. Dr. Cleveland thinks that people become sick from the poisonous effects of lead more frequently than is generally supposed. He knows a doctor who has been attacked with it a number of times, and yet has been unable to convince him that *lead* was the cause of his pains. He uses water drawn through a long leaden pipe; croton oil afforded him relief. Dr. Cleveland has administered croton oil successfully in other cases. He is stringent against the use of leaden tubes for water pipes, or lead for cisterns, and cooking utensils. Cases of lead colic are often brought before him.

The Scalpel, by Dr. Dixon, of this city, also contains a searching and able article on lead poisons. He goes against the employment of white lead for painting the interior of buildings, and exhorts people to use white zinc as a substitute. We would also recommend, in the strongest language, the use of the white zinc for inside painting. It is safe and will keep its color much longer than white lead. Lead affects some people more readily than others, but all persons should give it a wide berth when they can. We have known persons who worked every day for months among solutions of litharge, acetate and nitrate of lead, and yet enjoyed good health. Sulphur has been recommended by some as an effectual cure for the lead colic, yet in the foregoing case it appears to have done evil instead of good. The use of the quininia seems to favor the chrono-thermal theory.

Russian Sheet Iron.

Russian sheet iron is manufactured by Mr. W. Devees Wood, at the McKeesport Iron Works, a few miles above Pittsburg, on the Monongahela river. It is described as a beautiful article, with a smoother surface, a finer gloss, and a richer color, than any sheet-iron made in Russia.—[Ex.

The process of making Russia sheet-iron has long been kept a secret. A few years ago, a person made application to Mr. Burke, then Commissioner of Patents, to see if he could not be protected in its manufacture, as he had discovered the secret. In England he could have secured a patent; our patent laws afforded no protection to the introduction of a new art. Mr. Burke mentioned in his Report, that it would be well if some protection could be afforded to the introduction of such a useful art; we entertained the same views and do so still. We know nothing about the manufacture of the iron, except what is stated in the above extract, but we have been told frequently that the process was a very simple one when understood.

Paraguay.

Mr. A. E. Hopkins, son of Bishop Hopkins, of Vermont, who has resided for a number of years in South America, delivered a lecture before the American Geographical Society, at the Rooms of the Historical Society, this city, on the evening of the 13th inst. This South American State is contained within the boundaries of the Paraguay and Parana rivers, and an undefined boundary between Brazil. The Rio de la Plata is formed by the junction of the two rivers spoken of; it is very broad and shallow. The river Parana flows for thirty-six leagues through a narrow gorge in the Cordilleras forming a series of the most extraordinary rapids in the world, and which have never been seen by a white man. This river is very suitable for navigation, excepting through these rapids. The Indian barbarians have increased lately upon the once civilized portions of the country; this is owing to domestic dissentions. Paraguay has a population of 1,200,000. Mr. Hopkins explored the Tibicuari river last year; its banks are thickly populated, and it can be navigated by steamboats of light draft for eighty leagues. Paraguay has been a sealed country to the rest of the world for a number of years; this was brought about by the tyrant Dictator Francia, who adopted a policy of non-intercourse with the world. He died in 1840, when the country was opened to foreigners. The country is now shut out from the world, owing to the tyranny of the Dictator Rosas, of Buenos Ayres, who has annihilated all freedom, and has been guilty of every crime. He has twice been supported in his despotic work by France and England. His policy is to shut out the light of civilization and commercial intercourse, and the only communication which he permits Paraguay to have with the sea-board, is a monthly mail carried by an Indian scout. Paraguay produces gold, precious stones, sugar, rice, corn, and coffee equal to Mocha. The forests teem with the most useful woods, and medicinal herbs flourish in luxuriant variety and profusion; it produces fine indigo, and the cochineal insect—the most splendid scarlet dye in the world—is abundant and excellent; the finest gums exude from the trees, and the air is perfumed with the breath of the most fragrant shrubs; the India Rubber Tree is there, and a cedar which yields a glue that is unaffected by the weather when dry. A tree named Lapacho grows there, and it appears to be indestructible, for he saw door sills of it which had been used for two hundred years, and looked as fresh as when laid down, (this tree we recommend to the Directors of the Panama Railroad, for piles). There is a tree named the Palo de Vivora—snake tree—the leaves of which are an infallible cure for the poison of serpents. The Palo de Leche, or milk tree, is a vegetable cow; and the Palo de Borracno, or drunken tree, is a vegetable distillery. The upper classes of Paraguay are brave, stout, hospitable, and intelligent; they have a good feeling towards the people of the United States. The time has come for the United States to extend its supporting influence to the intelligent people of Paraguay, so as to force an open intercourse with it by the freedom of the Rio de la Plata.

Isthmus of Panama.

This is the title of a neat little volume, by Dr. Griswold, lately one of the surgeons of the Panama Railroad Co., and published by Dewitt & Davenport; it contains a graphic account of what he saw there, and is full of interesting information. From the formation of the Isthmus, he says, "it is impossible to resist the conclusion that, at no remote period, the two Americas (North and South) were completely separate, the ocean flowing freely and uninterruptedly between them, and occupying nearly all the space from Tehuantepec to Darien." The Isthmus, Col. Hughes states, was formed by igneous agency—the elevating cause of Geology. The India Rubber Tree grows there, and is tapped for its juice, like the maple with us, which, however, is employed for a far different purpose than making sugar, it being made mostly into shoes. The juice is white, of a creamy consistence, and the shoes are made by dipping moulds into it, the same way as candles. The shoes are blackened by smoke, they being held over a fire after every dip in the juice, and are dipped until they are of the required thickness.

The Panama Railroad is progressing with vigor: the track is laid for about twenty miles, and the cost altogether, for crossing the Isthmus, is about $35.

Steam Boiler Explosions.

General James, Senator from R. I., has introduced a resolution into the Senate, requesting a committe to be appointed to inquire into the causes of boiler explosions, and to provide measures for their prevention. We hope that good will come out of this. Gen. James himself can throw light on the subject. But various reports have been made in Congress on it before, and the number of boiler explosions are no less now than before Congress passed the statute of inspection. There must be something wrong; who will provide a sure remedy? On Tuesday, the 13th inst., the steamboat George Washington, on her way from New Orleans to Cincinnati, exploded her boilers a little way from Grand Gulf, and sixteen persons lost their lives. It is a sad thing to be recording the deaths of so many human beings by steam boiler explosions.—When a few men are condemned to die for crimes, philanthropy is excited to a high pitch, in order to prevent the execution of their sentences. This we do not say is wrong, we like to see a display of mercy instead of wrath, but when we look at the hundreds of lives that are yearly taken by recklessness, through the explosion of steam boilers, we cannot but conclude that there are few who have just views respecting the objects of philanthropy.

Explosion of a Drum.

A sheet-iron drum or "dumb stove," used in a chamber of the sash and blind factory of Mr. Phelps, in Salem, as a receiver of surplus heat from a stove, blew up last week, with a loud report, and was completely demolished. The stove was fed with anthracite coal, but chips had been thrown upon the top of the coal, and it is probable that the flame passed up into the drum, and set fire to gas which had collected there.—[Exchange.

[It is not an uncommon thing for some people to close the dampers of their stoves, when the coals are all red hot, in order to get all the *benefit* of the heat. It is a bad and unhealthy custom, for the gas emitted into the room is poisonons. The above drum in all likelihood contained carbonic acid gas slightly condensed by cold, which suddenly expanded by the rapid ignition of the chips, and burst the frail drum asunder.

Virginia Farming.

A very great improvement has taken place in agriculture in every one of our States, within the past fifteen years. In Virginia, like the Mohawk Valley, where many farms, once fertile, had become deserts,—these very deserts, by superior cultivation, now blossom like the rose. We see by an article in the "Plow," that General B. Peyton, of Richmond, Va., purchased a farm, a few years ago, on the James River, which had been abandoned as almost worthless, it having been reduced by improper cultivation; but now, merely by plowing deep, instead of scratching, he raises fine fields of wheat. He has subsoiled the farm and restored its fertility. To others, we say, go and do likewise. Some people have an idea that land *runs out*; this is all nonsense—the older the land is, so much the better, if properly cultivated.

Steam Engines.

The reader's attention is directed to the advertisement of Steam Engines, on another page; they present rare opportunities to those having need of such articles. Those who require such engines have peculiar advantages presented to them.

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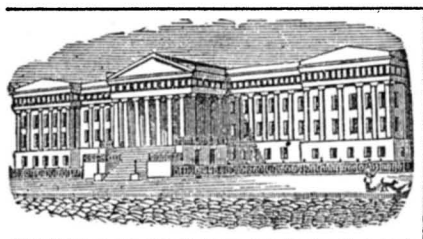

Reported Officially for the Scientific American.

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING JANUARY 13, 1852.

SCOURING KNIVES AND FORKS—By Chrstopher Aumock, of Columbus, Ohio: I claim the construction of this machine, composed of two cylinder brushes with their peripheries in contact, which causes the friction necessary for scouring or polishing, and, at the same time, keeps the cylinder brushes, which do the work of polishing or scouring, wet with the polishing substance continually, while the machine is in motion, by immersing the underside of said brushes in the liquid, as they revolve around on their axis. The article to be scoured or polished must be held in a perpendicular position and moved up and down between the cylinder brushes, while in the act of scouring or polishing.

BLIND AND SHUTTER OPERATOR—By James R. Creighton, of Cincinnati, Ohio: I claim the sliding extension rod, provided with the bent arm or hook, groove, notch, and tooth, as described, in combination with the staple, catch, and serrated neck, fitting into a corresponding socket in the plate, whereby the shutter or blind is opened or closed by manipulation from the inside, and retained in position when opened, by the fallen bent arm in the staple, and when closed, by the introduction of the bent arm into the notch in the catch, the serrated neck with its corresponding socket in the plate preventing the bent arm from being dislodged from either position by tampering from the outside.

RUNNING GEAR OF CARRIAGES—By G. L. Haussknect, of New Haven, Ct.: I do not claim the separate use of one segment on which the end of the perch rests; neither do I claim two pivots attached to the body; but I claim placing the pivot in the rear of the forward axle, in combination with the two sets of segments, or circles, or their equivalents, as described.

CUTTING THE PILE OF PILED FABRICS—By John Johnson (assignor to Elias Johnson), of Troy, N. Y.: I claim the method of connecting the cutter, one or more, with the carrier, by means of a joint, as specified, in combination with the guide or feeler, one or more, whereby the guide or feeler is carried down to determine the position of the cutter or cutters, before it or they begin to cut, as described.

I also claim connecting the cutter or cutters and feeler or feelers with the reciprocating carriage, by means of a spring joint, substantially as specified, so that the tension of the spring, or its equivalent, shall draw the feeler or feelers against the range of loops to be cut, to insure the proper position of the cutter or cutters, relatively to the range of loops to be cut, as specified

And, finally, I claim the method of operating the cutters and guides towards and from the face of the cloth, and towards and from the lay, by connecting the ways on which the carriage runs, by arms, to the arms of a rock shaft, and to two inclined rocking joints, as specified, whether the rock shaft be operated by the means specified or the equivalents thereof.

LANTERNS—By Philos Blake, of New Haven Ct.: I claim the combination of a lantern, of any construction, with the additional appendage described, for the purpose of adapting the same to be carried on the top of the fore-arm, and of keeping it in an upright position thereon: and this I claim, whether said appendage be constructed in the particular form and manner set forth, or in any other manner, whereby the same object is accomplished by substantially the same means.

ORNAMENTAL PAINTING ON GLASS—By John W Bowers, of Brookline, Mass.: I claim, in combining with the process of painting and ornamenting, bymetallic foil, that of corrugating or crimping the foil so as to impart to the figures a power of reflecting light, so as to produce the sparkling, scintilated appearance, as specified.

DRESSING STONE—By Albert Eames, of Springfield, Mass. (assignor to C. T. Shelton, of New York City): I claim making the upper surface of the ways elastic, as described, in combinatiou with the cutter carriage, constructed and operated in the manner described.

I also claim the manner, as described, of mounting the stone carriage on wheeled axles, so that it can be elevated and depressed, in combination with the feeding platform, running on ways, as described, so that the carriage can be run on wheels, to bring stones to and remove them from the machine, and be let down on to the platform, to receive the feed motion, as described

And, finally, I clam the dogs jointed to and in combination with the jointed arms, substantially as described, so that by means of wedges, or their equivalent, the block of stone can be adjusted and secured in place, as described.

SHAKERS OF WINNOWING MACHINES—By Henry Filburn, of Dayton, Ohio: I claim the method of moving the shaker fingers, in the manner and for the purpose set forth.

IRON FENCE—By Henry Jenkins, of Cincinnati, Ohio: I claim connecting the parts of a wrought-iron fence to each other by casting iron ornaments upon them, for the purpose of ornamenting and fastening the parts together, as described.

BEVELLING PLANES—By H. W. Lewis, of Bath, N. Y.: I claim, first, the adjustable gauge bar and the vertical adjustable guide, in combination with the double faced plane-stock, all constructed and relatively arranged, as described.

Second, the combination of the guard screws and stock, adjustable guard, gauge bar, vertical guide, and plane stock, the whole being constructed and arranged as set forth.

LOOMS FOR WEAVING PILED FABRICS—By C. A. Maxfield, of Troy, N. Y.: I claim, first, the employment, on each side of the loom, of a wing, constructed substantially as described, when mounted upon either end of the lay, the rock-shaft moving independent thereof and of each other, and vibrating alternately with each other, in the arc of a circle, scribed from the said rock-shaft, and upon which are mounted the ways of the pile or figuring wires, whereby the said wires are carried to be re-inserted into the open shed, and thence forward to the last pick of the woof or weft, as described.

Second, I also claim causing the wings to recede to carry the wires to the open shed, and then advance frontward with the wires to the woven pile, alternately, by the action of the lay itself, each wing being locked to the lay, at the proper moment, and disengaged therefrom, on the insertion of the wire, by the action of the curved lever, as described.

Third, I likewise claim pivotting the ways of each wing, and furnishing the inner ends thereof with arms projecting into openings in the breast beam, whereby the ways, with the figuring wires, are made to maintain a horizontal position during the vibration of the wings, in the arc of a circle, as described.

Fourth, I also claim providing each wing with a holding lever pivotted to the frame and vibrating with the motion of the wing, and locked by means of a spring plate and pivotted arm, actuated by the advance motion of the double arms of the rock-shaft, when the wire is at rest in the warp, whereby the wing is retained steadily in its position until the withdrawal of the figuring wire.

Fifth, I also claim combining the intermediate sliding arm, horizontal rods, with the carrier and wire, whereby the middle of the latter is sustained and prevented from trembling whilst being inserted and withdrawn from the web.

MAKING SUGAR CANDY—By Bartholomew O'Brien, of Rochester, N. Y.: I claim making candy by machinery, substantially as set forth.

APPARATUS FOR ATTACHING PIECES OF METAL TO EACH OTHER BY CASTING—By H. B. Osgood, of Thompsonville, Ct.: I claim the use of movable jaws attached to the permanent parts of the flask, for the purpose of holding the steel pivots, or bearings, of levers and beams of platform scales, and other analogous articles, firmly in the exact position required for use, while the fused iron or other metal is being poured into the mould, so as to fix them securely in the lever, &c., and so that the movable jaws will readily yield to the shrinkage of the metal while cooling, and prevent any injury from straining any of the parts, when the whole is constructed, arranged, and fitted to operate substantially as described.

BUCKWHEAT FANS—By Alfred Platt, of Waterbury, Ct.: I claim the method of separating the hulls from the kernels of buckwheat, by shaking them on a table or tables, made slightly concave and rough, as specified, in combination with a current or currents of air, blown over the surface of such table or tables, to carry off the hulls, whilst the kernels are retained or held back by the form of the surface of the table or tables, as specified.

PUNCHING SHEETS OF METAL—By S. T. Sanford, of Fall River, Mass.: I claim the combination of the hinged flaps, their levers, restoring springs, and tripping studs, or equivalent mechanical contrivances, with the movable carriage, the punching cylinders or mechanism, the whole being arranged and made to operate as specified.

MOULDING IN FLASKS—By Edward Satterlee, of Albany, N. Y.: I claim making moulds in and by the alternate motions of a sifter, sliding knife to cut off the sand when the flask is filled, press, and movable bed, connected with and worked by the continuous motion of a single shaft, substantially as described.

I do not claim the sifter or press as my invention.

I also claim the moving, stopping, and starting of the bed to and from the points where the operation of sifting, filling, and pressing the sand are done, by the continuous rotary motion of a simple shaft, substantially as described.

I also claim the method of striking the surplus sand from the top of the flask, after the curb is removed, by means of a self-adjusting bar or knife, substantially as set forth.

METALLIC HEDDLES—By Jacob Senneff, of Philadelphia, Pa.: I claim casting the eye on the wire which constitutes the heddle, harness, or heald, through which the warp passes, in the manner set forth, producing a heddle much superior to any other known or used, and which will remove many of the difficulties heretofore experienced in the use of the common twisted wire heddle.

TURNING PRISMS, &c.—By Allen Sherwood & Avery Babbett, of Auburn, N. Y.: We claim the prismatic lathe herein described, consisting essentially of a rotating, cutting instrument whose cutters, in rotating, combine to describe a figure whose longitudinal sections are the counterparts of the outline of the longitudinal sections of the figure to be produced, and of a carriage to hold the block in such a position that its axis is always parallel with that of the cutting instrument, and at the same time, to move it transversely to the same, for the purpose described, and allow it to be turned on its axis at pleasure, and to be held from turning while being acted upon by the cutters.

RE-ISSUE.

PLANING MACHINES—By C. A. Spring & P. Boon, of Kensington, Pa. Originally patented July 30, 1850: We claim hinging the bed-piece at one end, and raising and lowering it at the other, in combination with the revolving cylindrical cutter, in the manner set forth.

We also claim the combination and moving of the feed rollers with the stationary ones, by the oblique links and gear, as described, the whole being constructed as described.

DESIGNS.

STOVES—By James Wager, David Pratt & Volney Richmond, of Troy, N. Y.

FLOOR OIL CLOTH—By James Paterson (assignor to James Albro), of Elizabethtown, N. J.

COAL STOVES—By John Burgess (assignor to Geer, Chaffee & Richmond), of Troy, N. Y.

Dip of the Magnetic Needle.

Prof. Norton delivered a lecture before the Mechanics' Association at Providence, R. I., on Wednesday evening, the 7th inst., when he presented the following theory of the dip of the needle of the compass:—

According to his view, every particle of matter at and near the earth's surface, in the station of the needle, acts magnetically upon each of its poles, the direction of the action being always at right angles to the line conducting the particle with the pole, or lying in the circumference of a verticle circle, traced round the particle as a centre, as if a current or vortex of some subtle fluid were circulating around the particle and impelling the pole of the needle in the direction of its flow. In the action of the north pole, this direction is such as to urge it towards the north, whether the particle lies on the north or south of the station of the needle. In the action upon the south pole the direction is the reverse. The intensity of the magnetic action of a particle of terrestrial matter is conceived to be proportioned to its temperature.

End of a Nobleman whose Progenitor Insulted Franklin.

We see it stated in some papers, that on the 30th of last month John Baron Loughborough, a British nobleman, was found dead on board of a schooner lying at a wharf, at New Orleans; he was addicted to excessive drinking, and died from the effects of this terrible habit. It is stated that he is the last of the male line of a noble house. Well, what of it? His nobility was that of king-craft; he was an ignoble *man*. It also is stated that he was the grandson of Alexander Wedderburne, the first Lord Loughborough. The old Wedderburne was a Scotchman and an Edinburgh advocate; he was once reproved by a Scottish Judge for some offensive language to the Court, and this made him quit Scotland and become a member of the English bar. His uncommon abilities soon raised him to distinction in London, he arose to be a Member of Parliament, and so won upon the English, by his clear pronunciation of the language, an exception to the Scottish Members, that he was advanced to the Ministry, and was at last made Chief Justice of the King's Bench. Under Bute's Administration he was a member of the Cabinet, and during the early troubles of our then Colonies, it was he who so atrociously abused, by his brow-beating conduct, our great and noble Franklin, when he was sent on his mission to represent the grievances of the colonies. He attained what he unscrupulously labored for—wealth, honors, and a family crest among England's nobility. There is a moral in the death of this inebriate scion of the elder Wedderburne. His death adds strong testimony to the 13th and 14th verses of the 5th chapter of Ecclesiastes:—"There is a sore evil under the sun, riches kept for the owners thereof to their hurt, they perish by travail; he begetteth a son and there is nothing in his hand." Many who have read the notices of the death of this young man in the papers, will perhaps be somewhat instructed by our remarks; for there are not many acquainted with the foregoing facts.

Consumption of Smoke.

Last week we presented an engraving of Juke's Patent Furnace for Consuming Smoke. It is our aim to present those things to our readers which are of interest and general importance. The said furnace is highly appreciated, it seems, on the other side of the Atlantic, and out of England, the country of the inventor. Since our last number was issued, we have received a copy of the North British Mail, Scotland, from which we extract the following:—

"We had the pleasure the other day, in company with Councillor Pearson, and Mr. G. W. Muir, of paying a visit to the works of Messrs. J. & W. Crum & Co., at Thornliebank, to see in active operation a Juke's patent smoke-preventing furnace. As we have repeatedly directed the notice of both the smoking and anti-smoking sections of the public to a sample of the same article a little nearer hand (Mr. B. F. M'Cullum's Govan Croft Dye Works), it is unnecessary for us now to occupy space. It is, however, interesting for accidental reasons. It is of Scotch production entirely, having been made by Messrs. Crum themselves; and the high respectability and well known scientific character of these gentlemen is a guarantee against there being any attempt, on their part, to deceive others, or being themselves easily deceived. If it can be called such, the experiment has been completely successful, and the furnace is now working to the entire satisfaction of all concerned, there being positively not much more smoke, if indeed it amounts to so much, than may be seen from a 'well-lighted tobacco pipe.'

From the peculiarity in the fitting of the furnace at Mr. M'Cullum's, it was found that a clinkering dross did not burn well in it, and we believe the completion of the one made by Messrs. Crum, was looked for with some anxiety by the anti-smoke committee, and Mr. Muir, as affording better means of judging respecting the suitableness of various descriptions of coal than they have hitherto had. The coals we saw used were from Hurlet, and more unlikely stuff we never saw thrown into a fire. Compared with it, the dross in common use in Glasgow may be classed as round coal, and yet a fine bright fire it did make, and without producing smoke to a perceptible degree. We content ourselves by giving a few statistics that may be useful in enabling parties to form a correct judgment as to the merits and cost of this useful appliance. The furnace weighs above six tons, and is calculated to raise steam for an engine of twenty-five to thirty horse-power, according to the form and dimensions of the steam boiler under which it may be placed. The fire is spread over a surface of twenty-three square feet, the fire bars measuring four feet across, and 5 feet 9 inches from door to bridge. The boiler under which it is placed is a round one, 19 feet long, by 6 feet 6 inches in diameter, having a central flue of 30 inches diameter. Previous to the application of this patent, the steam was raised by an ordinary furnace. There has not been time to institute experiments to show the extent of saving; but it is already evident to the Messrs. Crum that the steam is better raised by the Juke's than it was by the common furnace. The boiler was formerly, at times, hardly able for the duty assigned to it, but it is now fully equal to its work."

W. Crum, one of the partners mentioned above, is one of the ablest practical chemists in the world, and for generel scientific knowledge, he stands very high.

The Arabia Steamship.

The Cunard Line have learned something from Brother Jonathan in the construction of their new ship, which has recently been launched at Greenock, Scotland, by Messrs. Steel. The builders have moulded her much sharper than either the Asia or Africa,—thus copying after the Baltic and Pacific. She has a fine entrance and run. It is expected that she will be ready in April. She has two series of diagonal iron braces extending from stem to stern, inside, reaching from the main deck down to the bridge. The braces are three feet apart. She is to have but two masts, but will have two funnels. The engines are being constructed by Mr. R. Napier. They are of the largest size, we believe, ever put on board a vessel, the cylinders being 103 inches in diameter, with a nine feet stroke. The collective power of the two engines will be upwards of 1000 horse-power, working at a low pressure. There are to be two sets of tubular boilers placed before and abaft the engine-room, each having, of course, a separate funnel. The wheels are 37 feet diameter, with fixed wooden floats, 11 feet long by about 3½ feet broad.

The principal dimensions of the Arabiar are

Length of keel and fore-rake . .	285 feet.
Length on deck	310 "
Breadth of beam	40·8 "
Depth of hold	27·7 "
Tonnage	2,402 tons.

We have slightly noticed this steamer before; this embraces a more particular account of her size, &c. Her bracing is the same as that adopted in the Collins Line. Her power is greater, according to her tonnage, than any of our steamships, but there appears to be a difference in the mode of estimating the tonnage.

How to Cook Cabbage.

Chop the half of an ordinary head very fine put it in the spider or saucepan, add two-thirds of a tea-cup of water atable-spoonful of lard, and half a teaspoonful of salt; cover and cook it from one hour and a half to two hours, giving it now and then a stirring. Then add two-thirds of a tea-cup of good vinegar, some pepper and salt sufficient to season it to taste. Let it be on the fire five minutes and serve up.

Stearine.

This is the most solid constituent of fat; it can be obtained by mixing melted suet with six times its volume of ether, and, when cold, submitting it to a great pressure. It is very useful for many purposes.

An Interesting International Patent Case.

Next week we will publish a most interesting patent case, relating to international patent rights, which was recently tried in England.

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TO CORRESPONDENTS.

S. & B., of L. I.—Your draft for $20 came duly to hand, and was promptly honored.

B. L., of Iowa—Three chisels are all that belong to Alcott's mortising machine. You got the requisite number.

C. F., of N. Y.—The peculiarities of the wheel to a carriage could not be embodied in the same application with the "reach," or any other part of the vehicle, unless the one part had some particular action upon the other. The diagram you send is precisely like Helton's, described on page 148, Vol. 6, Sci. Am. Try again, you will hit upon something patentable yet.

J. M. G., of Ohio—The drawing of your machine for packing flour seems to us to be new; we think it illustrates a patentable invention.

O. M., of Mass.—Your application is filed; you can go on manufacturing as rapidly as you please.

D. T., of Mass.—We should think the Camera Lucida to be inferior to the Camera Obscura for the use you mention.

T. H. D., of N. H.—Your last remittance of $7 is received, which balances our account against you.

E. C., of N. Y.—The question as to whether the Commissioner did you justice in 1842, we cannot decide; it would appear, however, from the emphatic letter to Hon. Byram Green, that no chance existed at all for your claims. The case we referred to about withdrawing the papers, was a different one from yours. The Commissioner can return you the papers, but will not after the $20 are withdrawn. We shall preserve the letters sent subject to your order.

G. W. S., of Pa.—The numbers you order of Vol. 3 cannot be supplied.

D. G. S., of N. Y.—There is nothing in your plan of taking the outline of drawings, we believe it is practiced very generally.

A. R., of Mass.—We think your method of roofing new and patentable: it is not so cheap as the zinc roofing but it will make a durable covering. A large model, 1 foot square, together with the patent fee of $30, and a full description, will be required before any measures can be taken to secure it.

J. B., of Pa.—Such a mortising machine as you want can be had of S. C. Hills, 12 Platt st. You require one to bore and mortise at one operation—Swingle's patent does this.

A. A., of Geo.—Messrs. Geo. Vail & Co., of Morristown, N. J., can furnish you all the particulars about the portable saw mills; they can furnish the saw mill irons.

W. R., of Vt.—Mr. Brundage, of Troy, N. Y., has, as we learn, an excellent horse-nail machine. We have examined several fine specimens of the work produced.

W. R., of R. I.—By reference to Vol. 3, Sci. Am. you will find an engraving of Bishop's Street Cleaning Machine. It is substantially similar to yours, and why it has not been employed we cannot say. We think Bishop's claims will cut you off.

A. H., of N. Y.—A machine was patented in England, about three years ago, for sewing harness. It made the saddler's stitch. We have never heard anything about it since. The ore you speak of is not uncommon; it is peculiar with some kinds of the Franklinite in New Jersey, and with many other ores The reason is well known to mineralogists.

C. L., of Ct.—Your brake appears to be a very simple and good one. The principle, however, of the toggle joint was applied to a brake of Gurney's carriage in 1828. Yours has new features that we like.

A. R., of N. Y.—You will see something about stearine in another column.

J. A. R., of N. H.—The same chamber, placed behind the cylinders, on the suction pipe, is employed on fire engines. We have never seen it so placed on the common pump, but the application, we believe, would be considered unpatentable by the Patent Office.

E. N., of N. H.—We do not know of any chimney with the syphon. It appears to be patentable.

A. O., of N. Y.—The cars that go the fastest exert the greatest force on the bridge to break it.

W. K., of Miss.—We believe you are safe in using your wheel; we do not know of any other like it.

G. P. H., of N. Y.—Your remittance for Mr. P. was correct; continue your good work. A reply to your enquiry will be soon made.

A. E., of N. Y.—The plan you propose for stationary steam power on roads is the same as that which was employed on the first railroads, and as employed on some steep inclines yet. It is far more expensive than you are aware of; this we are perfectly sure of, as we know the expensiveness of the plan, by personal comparison.

Money received on account of Patent Office business for the week ending January 17.

C. S. of Ga., $55; T. H. T., of N. Y., $37; T. H T., of N. Y., $40; C. S. B., of N. Y., $55; O. M., of N. Y., $42; J. G., of Mass., $40; R. T., of Pa. $30; J. E. M., of Ct., $20; F. C. G., of of N. Y., $30; C. R. M. W., of N. Y., $25, E. P. R., of N. Y., $30; N. A., of Pa., $55; F. O., of N. Y., $32; N. C., of Ct., $12.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Jan. 17:—

C. R. M. W., of N. Y.; E. P. R., of N. Y., (2 cases); O M., of Mass; N. A., of Pa.; T. H. D., of N. H.; F. O., of N. Y.; N. C., of Ct.

New Edition of the Patent Laws.

We have just issued another edition of the American Patent Laws, which was delayed until after the adjournment of the last Congress, on account of an expected modification in them. The pamphlet contains not only the laws but all information touching the rules and regulation of the Patent Office. We shall continue to furnish them for 12 1-2 cts. per copy.

An Important Paragraph.

Whenever our friends order numbers they have missed—we always send them if we have them on hand. We make this statement to save time and trouble, to which we are subjected in replying when the numbers called for cannot be supplied.

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American and Foreign Patent Agency

IMPORTANT TO INVENTORS.—The undersigned having for several years been extensively engaged in procuring Letters Patent for new mechanical and chemical inventions, offer their services to inventors upon the most reasonable terms. All business entrusted to their charge is strictly confidential. Private consultations are held with inventors at their office from 9 A. M., until 4 P. M. Inventors, however, need not incur the expense of attending in person, as the preliminaries can all be arranged by letter. Models can be sent with safety by express or any other convenient medium. They should not be over 1 foot square in size, if possible.

Having Agents located in the chief cities of Europe, our facilities for obtaining Foreign Patents are unequalled. This branch of our business receives the especial attention of one of the members of the firm, who is prepared to advise with inventors and manufacturers at all times, relating to Foreign Patents.

MUNN & CO., Scientific American Office,
128 Fulton street, New York.

A STEAM ENGINE of 30 horse-power, for sale, with two boilers, furnace front, grate bars, copper pipe, heater, double-acting pump for cold and hot water; also Judson's patent Governor Valve, and Noyes & Allan's Metallic Packing—all complete and ready to be put in operation immediately. For particulars address HENRY BACMEISTER, Steam Engine Builder, Schenectady, N. Y. 19 4*

ONE DOUBLE ENGINE of six-horse power, second-hand, used about one year; the size of cylinders, 4 inch bore and 12 inch stroke, and furnished with pump, regulator, and all attachments; the boiler is horizontal tubular, 7 feet long, 3 1-2 inches in diameter, and requires no brick to set it, the fire being made inside the boiler. The above engine will be sold for $400 cash, delivered in New York.
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ENGINE FOR SALE—An Upright Engine 6 1-2 horse-power, 18 inch stroke, 7 inch diameter; pumps, governor, all complete; 8 foot boiler, 3 feet diameter, two flues; cast-iron head, grate bars, &c. —built in 1848, has run 8 month in all, is in good order, and can be warranted shipped in good order for $475. Address, remitting draft, to MUNN & CO.

EUREKA! NEW YORK AHEAD OF the World!—Patent Premium (Silver Medal, 1851, Amer. Insti.) Corn and Cane Stalk, Hay, and Straw Cutter. Berthoff's machine is warranted, after a test of 3 years, to surpass any machine of the kind ever offered in the United States,—strong words, but "FACTS are not assertions." It will cut, and leave in better condition, corn or cane stalks (almost any machine will cut hay or straw) and save 40 per cent. of material. It being impossible for the inventor to visit the different sections of the United States, he has concluded to offer State or County Rights to manufacture and sell his patent machines: a profit of 33 per cent. can be readily realized by manufacturing. Sales are unlimited. For information in regard to State or County rights Address (post-paid) ENGELBRECHT & HOOVER, Attorneys and Agents for the Patentee, 257 Broadway, New York. 19 4*

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JONATHAN S. WOOD, Luzerne Co., Pa., "Works better than any machine I know of," &c. 19 1*

$10 REWARD—I will pay the above amount to any person who will send by mail or otherwise, to my address, a perfect copy of the Jury Trial, commenced in May, 1846, by Hitchcock (an assignee of the Woodworth Patent) against Brown and others, in Vermont, within one month from this date.
19 3* SAML. B. SCHENCK, 64 Cortland st. N.Y.

THE WEEKLY SUN.—This large, interesting and excellent neutral Weekly newspaper,—the first dollar-a-year weekly paper ever printed—has now entered upon its sixteenth year of publication. Its contents embrace the very latest news from all parts of the United States and the world, received by Telegraph, from Correspondents and by Steamers; also Shipping Intelligence, Monetary Affairs, Prices, Current, Agriculture, Reports of the various American Cattle markets, summaries of general news, interesting selections of Light Literature, Mechanics. Single subscriptions ONE DOLLAR A-YEAR.

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19tf BEACH BROTHERS, New York City.

CLOCKS FOR CHURCHES, PUBLIC BUILDINGS, RAILROAD STATIONS, &c., and REGULATORS FOR JEWELLERS.—The undersigned having succeeded in counteracting effectually the influence of the changes of the temperature upon the pendulum, and introduced other important improvements in the construction of clocks, are prepared to furnish an article, superior in every respect (the highest grade warranted to vary less than two minutes in a year) to any made in the United States. Ample opportunity will be afforded to test their qualities. Glass (illuminated) dials of the most beautiful description furnished. Address SHERRY & BYRAM, Oakland Works, Sag Harbor, Long Island, N. Y.

"At the Oakland Works of Sherry & Byram there are made some of the finest clocks in the world."—[Scientific American.

"Mr. Byram is a rare mechanical genius."—[Jour. of Commerce. 19tf.

A. B. WILSON'S SEWING MACHINE, justly allowed to be the cheapest and best now in use, patented November 12, 1850; can be seen on exhibition at 195 and 197 Broadway (formerly the Franklin House, room 23, third floor), New York. Rights for territory or machines can be had by applying to
19 4* WM. S. LOVELL, Agent.

BILLINGS PATENT BAND WRENCH, for Wagons and Carriages.—This article is fully described and illustrated by engravings in No. 7, Vol. 7. of the Scientific American. The Patent Band Wrench applies to wagons and carriages where the common or square nut is used. They are perfectly tight and prevent all dust and dirt from reaching the axle. The wheel is taken off by means of a small pocket key. A Silver Medal was awarded this article by the American Institute at their late Fair in this city. The Bands are manufactured by the Patent Band Wrench Co., located at Claremont, N. H. Smith Van Horn & Co. are the agents for this city. Orders addressed to them, as above, will meet with prompt attention. A. M. BILLINGS,
12tf General Agent for the Co.

THE EXCELSIOR Sand and Emery Papers. are offered as new and superior articles, being manufactured by an improved process; the paper is made from the best Manilla hemp, and consequently is very strong and lasting; the grit is of the sharpest and most enduring kind, and is firmly attached to the paper with a remarkable evenness of surface; their freeness from ridges, stripes, and other imperfections, recommend them to the notice of consumers. These papers have been used by many of our first mechanics, and are pronounced superior to all others. Every sheet is stamped Blanchard & Parsons, and warranted. Samples furnished at the office, No. 187 Water street (2nd story), New York.
14 6m* BLANCHARD & PARSONS.

P. W. GATES'S PATENT DIES FOR CUTTING SCREWS—Patented May 8th, 1847.—This Die cuts Screws of any size, V or square thread, by once passing over the Iron. Also, Lead Screws for Lathes, Hoisting Screws, &c. All orders for Dies and Taps, with or without machines, will meet with prompt attention by addressing P. W. Gates, or Gates & McKnight, Chicago; Marshall, Bement & Colby, Philadelphia; Woodburn, Light & Co., Worcester, Mass. References—All the principal machine shops in New York, Philadelphia, and Boston. 13 6m*

ADIRONDAC American Cast Steel.—This steel has recently been greatly improved in uniformity, soundness, strength, and toughness. It is purely American, and will be sold as low as the imported; this improved quality is warranted superior to any other in market. Friends of home industry are requested to try this new and uniform steel.
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15 6* Warehouse 81 John st., N. Y

VENTILATION.—Mr. Ruttan, of Coburg, Canada, is desirous of an opportunity to direct the erection (for ventilation) of a good dwelling or school house in the city of New York. For particulars inquire at the Scientific American Office. 15 10*

LATHES FOR BROOM HANDLES, Etc.—We continue to sell Alcott's Concentric Lathe, which is adapted to turning Windsor Chair Legs, Pillars, Rods and Rounds; Hoe Handles, Fork Handles and Broom Handles.

This Lathe is capable of turning under two inches diameter, with only the trouble of changing the dies and pattern to the size required. It will turn smooth over swells or depressions of 3-4 to the inch and work as smoothly as on a straight line—and does excellent work. Sold without frames for the low price of $25—boxed and shipped with directions for setting up. Address (post.paid) MUNN & CO.
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FOR SALE—An Iron Foundry, with Patterns, Flasks, &c.; also engine and other lather, upright and horizontal drills, machinery, tools, &c. The foundry building is 63 by 34 ft., with a projection for cupola, and is well fitted for doing a large amount of business. There is also connected with the same a Blacksmith and Pattern Shop. Water power is used, and a large amount can be had at a reasonable rent. Persons wishing to engage in this profitable branch of business, will find it for their interest to call and examine the premises. Terms of payment made satisfactory. For particulars inquire of
SAML. DEMING.
Farmington, Ct., 1851. 18 4*

MORTISING MACHINE.—Dear Sirs: I received the Portable Mortising Machine about 3 weeks ago; I have used it, and am very well pleased with it. It is the best plan of a machine of the kind I have ever seen. W. R. McFARLAND.
Nashville, Tenn., 1851.
This machine is simple, durable, and effective, and is boxed and shipped for the low sum of $20.
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FRENCH BURR STONES—We can furnish an excellent run of Burr Stones, 4 1-2 feet, for $145, carefully put upon ship board. Apply to
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SCRANTON & PARSHLEY, Tool Builders, New Haven, Conn., have on hand six 12 ft. slide lathes, 28 in. swing; also four 8 ft. do.; 21 in. swing, with back and screw gearing, with all the fixtures; one 5 ft. power planer; 12 drill presses, 4 bolt cutting machines, 30 small slide rests; 5 back geared hand lathes, 21 in. swing; 15 do. not geared; 8 do. 17 in. swing on shears 5 1-2 feet; 25 ditto with and without shears, 13 in. swing; counter shafts, all hung if wanted suitable to the lathes. Scroll chucks on hand; also index plates for gear cutting. Cuts of the above can be had by addressing as above, post-paid. 9tf

BEARDSLEE'S PATENT PLANING MAchine, for Planing, Tonguing and Grooving Boards and Plank.—This recently patented machine is now in successful operation at the Machine shop and Foundry of Messrs. B. & T. Townsend, Albany N. Y.; where it can be seen. It produces work superior to any mode of planing before known. The number of plank or boards fed into it is the only limit to the amount it will plane. For rights to this machine apply to the patentee at the abovenamed foundry—or at his residence No. 764 Broadway; Albany. GEO. W. BEARDSLEE. 5tf

WATTS & BELCHER, Manufacturers of Steam Engines, Lathes, Planing Machines, Power Presses, and Mechanics' Tools of all descriptions. Orders respectfully solicited and punctually attended to. Washington Factory, Newark, N. J. 7 20*

PAINTS, &c. &c.—American Atomic Drier, Graining Colors, Anti-friction Paste, Gold Size, Zinc Drier, and Stove Polish.
QUARTERMAN & SON, 114 John st.,
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MACHINERY.—S. C. HILLS, No. 12 Platt-st. N. Y. dealer in Steam Engines, Boilers, Iron Planers, Lathes, Universal Chucks, Drills; Kase's, Von Schmidt's and other Pumps; Johnson's Shingle Machines; Woodworth's, Daniel's and Law's Planing machines; Dick's Presses, Punches and Shears; Morticing and Tennoning machines; Belting; machinery Beal's patent Cob and Corn mills; Burr mill and Grindstones; Lead and Iron Pipe &c. Letters to be noticed must be post-paid. 13 tf

WOODWORTH'S PLANING MACHINE—For sale, the right to use this justly celebrated labor-saving machine in the following States, viz., Pennsylvania west of the Allegheny Mountains, Virginia west of the Blue Ridge, Ohio, Indiana, Kentucky, Tennessee, Wisconsin, Iowa, Missouri, Arkansas, Texas, Louisiana, Florida, Alabama, and Mississippi. For particulars apply to the Proprietor, ELISHA BLOOMER, 208 Broadway. 17 12*

WOOD'S IMPROVED SHINGLE MACHINE—Patented January 8th 1850, is without doubt the most valuable improvement ever made in this branch of labor-saving machinery. It has been thoroughly tested upon all kinds of timber and so great was the favor with which this machine was held at the last Fair of the American Institute that an unbought premium was awarded to it in preference to any other on exhibition. Persons wishing for rights can address (post-paid) JAMES D. JOHNSON, New Haven, Ct.; or WM. WOOD, Westport; Ct., All letters will be promptly attended to. 37tf

LEONARD'S MACHINERY DEPOT, 109 Pearl-st. 60 Beaver N. Y.—The subscriber is constantly receiving and offers for sale a great variety of articles connected with the mechanical and manufacturing interest, viz.: Machinists' Tools—engines and hand lathes; iron planing and vertical drilling machines; cutting engines, slotting machines; bolt cutters; slide rests; universal chucks &c. Carpenters' Tools—mortising and tennoning machines; wood planing machines &c. Steam Engines and Boilers from 5 to 100 horse power. Mill Gearing—wrought iron shafting; brass and iron castings made to order. Cotton and Woolen machinery furnished from the best makers. Cotton Gins; hand and power presses. Leather Banding of all widths made in a superior manner; manufacturers' Findings of every description. P. A. LEONARD. 10tf

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RAILROAD CAR MANUFACTORY—TRACY & FALES, Grove Works, Hartford, Conn. Passage, Freight and all other descriptions of railroad Cars, as well as Locomotive Tenders, made to order promptly. The above is the largest Car Factory in the Union. In quality of material and in workmanship, beauty, and good taste, as well as strength and durability, we are determined our work shall not be surpassed. JOHN R. TRACY,
14tf. THOMAS J. FALES.

McCORMICK'S PATENT REAPERS AND MOWERS.—1700 of these machines, for which the great Medal of the World's Fair was awarded, are being manufactured at Chicago, Ill, with the intention of supplying the South-eastern States for the next harvest The gold medal of the Chicago Institute was recently awarded for this Reaper and Mower, tested against two other mowers, in cutting prairie grass; and the first premium of the State Agricultural Societies of Wisconsin, Michigan and Pennsylvania, were also awarded at their late Fairs. Price $120 at Chicago, and $122 delivered at Philadelphia; terms otherwise accommodating. 9tf

PATENT CAR AXLE LATHE—I am now manufacturing, and have for sale, the above lathes; weight, 5,500 pounds, price $600. I will furnish a man with each lathe, who will turn and finish axles for 50 cents each, if desired. I have also for sale my patent engine screw lathe, for turning and chucking tapers, cutting screws and all kinds of common job work, weight 1500 lbs., price $225. The above lathe warranted to give good satisfaction. J. D. WHITE, Hartford, Ct. 7 6m*

LOGAN VAIL & CO., No. 9 Gold street, New York, agents for George Vail & Co., Speedwell Iron Works, have constantly on hand Saw Mill and Grist Mill Irons, Press Screws, Bogardus' Horse-Powers, and will take orders of Machinery of any kind, of iron and brass; Portable Saw-mills and Steam Engines, Saw Gummers of approved and cheap kind, &c. Gearing, Shafting, large and small, cast or of wrought iron. 11tf

HAWKIN'S Stave Dressing Machine—Is now in operation in the city of Milwaukie, Wis., and will dress from 6 to 8000 staves per day, ready for the truss hoops, and at one operation. Rights for States and Counties, and also machines, for sale, apply to WM. HAWKINS, Patentee, Milwaukie, Wis.
15 20*

A. B. ELY, Counsellor at Law, 46 Washington st., Boston, will give particular attention to Patent Cases. Refers to Munn & Co., Scientific American. 13tf

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SCIENTIFIC MUSEUM.

On Boilers.---No. 9.

The different kinds of furnaces for steam boilers which have been invented, especially to consume the smoke, seem to be as numerous and as various as the aims of men. We do not intend to present illustrations of them all, as it would be of no great benefit to our readers to do so. We will endeavor, however, to present information respecting the most important and prominent of them. Within the past few years quite a number of plans for consuming smoke have been brought before the public, and with but few exceptions they possess little novelty; about them we shall have something to say at another time.

In 1685 a French engineer, M. Delasme, exhibited a furnace at the Fair of St. Germain, which consumed its own smoke. His furnace consisted of a long tube shaped like a syphon, which was inverted, the longest leg forming the chimney, and the shortest leg was placed at the bottom of the furnace. The fuel was deposited on the grate at the top of the short leg, and after the fire was ignited the air had to pass down through the grate, striking the fresh coals first, and the carbonic oxide was consumed by being carried down through the red coals, and then up the long leg of the chimney.

When steam engines began to grow numerous in England, that great inventor and mechanician, James Watt, soon turned his attention to the subject of consuming the smoke, and we find him securing patents, in 1785, for furnaces to accomplish this object, and his first patent embraces the very ideas so prominently brought into notice in every single smoke-consuming furnace of any worth at all, invented since that time. The principle embraced in his patent, was to mix a quantity of air with the smoke from fresh coal, and make it pass over the red-hot coal which had parted with all its smoke. The furnace was so constructed that it admitted air through the fresh coals, and then there was a passage or tube to admit fresh air—to be regulated as required—under the grate, to mingle with the carbonic vapor, and make it ignite when it came in contact with the red-hot coals. Since Watt's day, various plans, embracing the same idea, have been brought forward as new—such as admitting the air under the grate-bars, as in common furnaces, and when the fire was first mended, to admit fresh air by small holes above the fuel, &c. Watt's plans are illustrated and described in Hebert's History of the Steam Engine.

The general principles upon which the prevention of smoke may be effected, are now well known, and were thoroughly understood by James Watt, and his furnace was constructed upon a true sense of the principle. Smoke is not a nuisance where anthracite coal is used; bituminous coal gives off smoke, which is the result of partial combustion; it consists of small particles of fuel in mechanical suspension. The mode of preventing this smoke is to admit of a sufficient quantity of air to effect the combustion of the carbonaceous matter, when brought in contact with red-hot coals or flame. In bituminous coal there is both carbon and hydrogen, and of the vapors given off, the hydrogen alone is consumed in a furnace, unless the temperature is highly elevated. The gases produced by the *complete* combustion of coal are colorless and invisible, and do not come under the definition of *smoke*. Those furnaces which consume the smoke give out most heat, and thus save fuel. The product of perfect combustion is nearly all carbonic acid. From experiments made by Henry De la Beche and Dr. Lyon Playfair, in 1845, they being appointed by the British Government to examine into the best mode of preventing the smoke nuisance, they reported favorably respecting the modes like that of Mr. Prosser, illustrated in our last number. The air should be warmed before it comes in contact with the smoke, and this is accomplished by the plan spoken of, in a cheap and simple manner.

The Kettle Hat Yet.

A correspondent informs us that his views accord with ours exactly in respect to the comfort of the Kossuth felt hat, in comparison with the *hard-shell*; but then, he says, the hard-shell has other advantages which incline him to stick to it "a little longer." We must say that he is a genius and up to planning; the advantages are said by him to be as follows:—

"It is long and tall in the crown, and he sometimes carries his dinner in it and thus he saves a tin pail or a small basket."

"It is long and tall in the crown, and when he travels he sometimes carries his wardrobe in it, and thus he saves a trunk."

Well, this is pretty good, but then he might put a part of his wardrobe or luncheon in the Kossuth hat, and carry it under his arm, much easier than on his head; and beside this, it would enable him to exhibit his intellectual developement to advantage.

A FARM COTTAGE.---Fig. 1.

The design of this cottage was presented by Mrs. Sanford Howard, of Albany, to the New York State Agricultural Society, and is published in their Transactions.

Figure 1 is a perspective view of the dwelling, which is designed to front south, with an elevation of thirteen feet from the sills to the roof. It should occupy somewhat elevated ground, sloping a little to the north, and should be raised on an underpinning to suit the ground. To give chambers of the size designated, the apex of the roof should not be less than twenty-two or twenty-three feet above the sills. It is highly proper to leave a space for air between the finish of the chambers and the roof, which will prevent the rooms from becoming heated in summer.

Fig. 2.

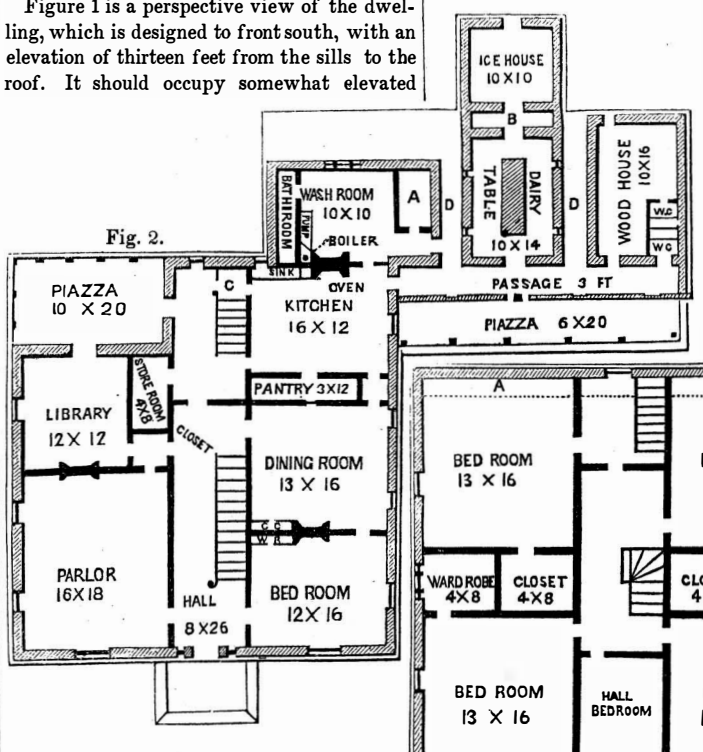
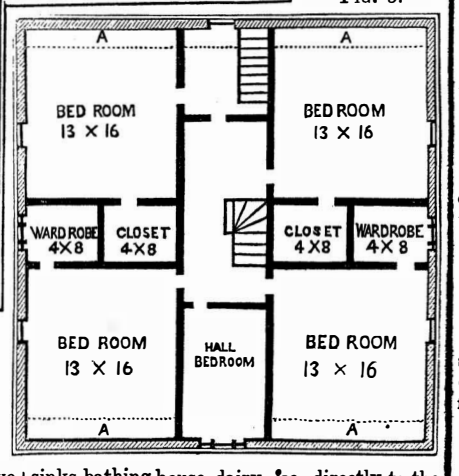


Fig. 3.



The site should be selected with a view to the easy construction of drains from the sinks, bathing house, dairy, &c., directly to the piggery, or barn-yard.

A good farmer will have a good cellar, and in some situations, the best way of warming a house is by a hot-air furnace in the cellar. The size of the cellar, and its particular divisions, should, of course, depend on the wants or circumstances of the owner. In some cases, it may be expedient to have it extend under the whole of the main body of the house. It may be observed, however, that it is not advisable to store large quantities of vegetables under dwellings, as the exhalations from them, especially when unsound, are known to be decidedly prejudicial to health. Hence, the barn cellar, and not that of the dwelling house, should be the repository of such vegetables as are wanted for the use of domestic animals.

In the plans, fig. 2 is the ground plan, and fig. 3 the attic.

In constructing a dairy, it is proper that such an excavation should be made as will leave the floor, which should be made of stone, two or three feet below the surrounding surface. The sides should be of brick or stone, and plastered; the walls high, and the windows made so as to shut out the light, and admit the air. The advantage of thorough ventilation and pure air is acknowledged by every one, who has ever paid attention to the manufacture of butter, though it is a matter generally too little thought of in the construction of apartments for that purpose.

To render the establishment as perfect as possible, the command of a good spring of water, which may be conducted through the dairy room, is necessary; when that cannot be had, an ice house in direct contact (as in the accompanying plan), and a good well when convenient, form the best substitute.

LITERARY NOTICES.

A PROFITABLE DOLLAR'S WORTH.—Our readers are particularly referred to the advertisement of the Weekly Sun, on another page. If any one desires to be furnished with a good and cheap weekly *newspaper*, that journal is THE WEEKLY SUN. The Daily Sun Establishment, in New York, is one of the greatest of the kind in the world. It is here that Hoe's last improvement, the mammoth eight-cylinder steam press, is used,—the only one in this country. All the facilities which belong to a large and flourishing daily newspaper concern are employed in the production of the Weekly Sun. Hence the publishers are enabled to supply the public with a noble sheet at an extremely low price.

LITTELL'S LIVING AGE—This work commenced its 31st Volume on the first week of the New Year. Of all the works published in our country, this deservedly ranks the highest, as a re-publication of the very cream of European literature. The articles are selected from those magazines of world-wide fame—the Edinburgh Review, Westminster, Blackwood, Chambers' Journal, and from many other periodicals—they are selected with great judgment and taste. It has been part of our literary food for a number of years, and we could not live without it. Sold by Dewitt & Davenport, Tribune Buildings, this city.

GRAIN TABLES—This is a most useful work, by James L. Elwood, and published by Henry C. Baird, of Philadelphia. It contains tables showing the value of bushels and pounds of different kinds of grain, calculated in Federal money, and so arranged as to exhibit, upon a single page, the value at a given price, from ten cents to two dollars per bushels, of any quantity from 1 lb. to 10,000 bushels.

INVENTORS

Mechanics and Manufacturers

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Postmasters, being authorized agents for the Scientific American, will very generally attend to forwarding letters covering remittances.

MUNN & CO.,
Publishers of the Scientific American,
128 Fulton street, New York.

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Any person who will send us four subscribers for six months, at our regular rates, shall be entitled to one copy for the same length of time; or we will furnish—

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